DOES NOT CIRCULATE

BULLETIN OF THE HISTORY OF MEDICINE

UNIVERSITY OF MICHIGAN
JUL 19 1954
MEDICAL LIBRARY

ORGAN OF
THE AMERICAN ASSOCIATION OF THE HISTORY OF MEDICINE
AND OF
THE JOHNS HOPKINS INSTITUTE OF THE HISTORY OF MEDICINE

VOLUME XXVIII MAY–JUNE, 1954 NUMBER 3

CONTENTS

MAIN ARTICLES

Milton's Gout: EDWARD A. BLOCK 201

David Hosack on the Qualifications of a Professor of Chemistry in the Medical Department: HERBERT S. KLICKSTEIN 212

Auto-Observation of Aphasia: WALTHER RIESE 237

Sir John Eldon Gorst and the Children of the Nation: BENTLEY B. GILBERT 243

Fifteenth Century Patients: LYNN THORNDIKE 252

Some Plastic Representations of Disease Made by Early Man: ANDERSON NETTLESHIP 259

NOTES AND COMMENTS

A Klippel-Feil Syndrome in the Artistic Works of William Blake: M. ELAINE MARTIN 270

The History of the Discovery of Pancreatic Diabetes: MARTIN M. NOTHMAN 272

MEDICO-HISTORICAL NEWS AND ACTIVITIES

Correspondence and Reports: Samuel Clark Harvey (John F. Fulton) — Medical History in Graduate Education (Samuel X. Radbill) — Correction 275

Announcements 278

BOOK REVIEWS 280

THE JOHNS HOPKINS PRESS
BALTIMORE 18, MARYLAND

BULLETIN OF THE HISTORY OF MEDICINE

ORGAN OF
THE AMERICAN ASSOCIATION OF THE HISTORY OF MEDICINE
AND OF
THE JOHNS HOPKINS INSTITUTE OF THE HISTORY OF MEDICINE

Founded by HENRY E. SIGERIST

Editor—OWSEI TEMKIN

ADVISORY EDITORIAL BOARD

WYNDHAM B. BLANTON — ESMOND R. LONG
GEORGE W. CORNER — RICHARD H. SHRYOCK

Manuscripts, review copies of books, and correspondence relating to the publication of papers should be addressed to The Editor, Bulletin of the History of Medicine, 1900 E. Monument St., Baltimore 5, Md.

Contributors of articles will receive 25 reprints without covers free of cost. An order form for additional reprints, giving the cost, is sent with the galley proof.

The Bulletin is published bimonthly. One volume of at least 500 pages is published during the year. The subscription rate is $6.00 a year in the United States and countries of the Pan-American Union, $6.25 in Canada, and $6.50 in other foreign countries. Single numbers when available are $1.50 each. Prices for back volumes may be had on application. Volume I is out of print. New subscriptions are entered to begin with the first issue of the current volume.

Active and Non-resident Members of the American Association of the History of Medicine receive the Bulletin on payment of $6.00 annual dues, of which $5.00 is for a year's subscription. Constituent Societies pay $10.00 annual dues, of which $6.00 is for a year's subscription to the Bulletin.

Claims for replacement of missing numbers must be received within 3 months (6 months in the case of foreign subscribers) following publication of the number.

THE JOHNS HOPKINS PRESS

BALTIMORE 18, MARYLAND, U. S. A.

PUBLISHED BIMONTHLY

January-February, March-April, May-June, July-August, September-October, November-December

Made in United States of America

Entered as second-class matter January 3, 1935, at the post office at Baltimore, Maryland, under the Act of March 3, 1879.

BULLETIN OF THE HISTORY OF MEDICINE

ORGAN OF
THE AMERICAN ASSOCIATION OF THE HISTORY OF MEDICINE
AND OF
THE JOHNS HOPKINS INSTITUTE OF THE HISTORY OF MEDICINE

VOLUME XXVIII MAY–JUNE, 1954 NUMBER 3

MILTON'S GOUT

EDWARD A. BLOCK

While much has been written about Milton's blindness, comparatively little attention has been paid to his gout. Milton's own reported testimony that he found his gout a worse affliction than his blindness[1] suggests that some correction of this curious imbalance is desirable. For, by concentrating on the one to the almost complete exclusion of the other, an important element in his life experience has been neglected, as has the opportunity to gain new insights into his character. It would therefore seem worthwhile to assemble the scattered evidence bearing on his gout and to examine it in the light of the known medical facts about this disease.

Since the exact nature of the basic disturbance that causes gout is still unknown and since no cure for it has yet been discovered, the disease remains today what the seventeenth-century French physician, Daniel Sennert (1572-1637), called it—"opprobrium medicorum," the physician's shame.[2] Nevertheless, it is generally agreed that gout is a disorder

[1] See Milton's remark, quoted by Jonathan Richardson, to the elderly Dorsetshire clergyman, Dr. Wright, "that was he Free from the Pain This [the gout] gave him, his Blindness would be Tolerable" (pp. 203-204), and John Toland's statement that "the Distemper that troubled him most of any other was the Gout" (p. 193). All quotations from the biographies by Richardson, Toland, the Anonymous Biographer, and Aubrey are from *The Early Lives of Milton*, ed. Helen Darbishire (London, 1932).

[2] All generalized statements about the gout in this and succeeding pages are based on the following standard medical textbooks: Sir William Osler, "Diseases of the Metabolism," *The Principles and Practice of Medicine*, 10th ed. (New York, 1926), pp. 421-

of the metabolism, which clinically is characterized by deposits of urates in and about the joints and by attacks of acute arthritis. It is one of the oldest recorded diseases, for we find a description of it in the writings of Hippocrates (fl. 400 B. C.), who gave it the medical name, podagra, by which it is known today. Etymologically the nomenclature is extremely apt for, coming from the Greek πούς, ποδ-, meaning foot, and ἄγρα meaning seizure or trap, podagra means seizure of the foot much as a trap grips the foot of an animal. The first use of the term "gutta," or drop, to designate gout is credited to Thietmar, Bishop of Merseburg (976-1018); later the word appears in the learned twelfth-century works of leading members of the medical school of Salerno as well as in the *Histoire de l'Empire de Constantinople sous les Empéreurs François*, written by the French historian Geoffroi de Villehardouin, between 1207 and 1212. The term "gout" owed its introduction and subsequent popularity to the prevailing belief that the disease was caused by the discharge of some abnormal element in the blood stream, drop by drop, into the joints affected. In Milton's time, this belief continued to be upheld by such eminent physicians as Thomas Sydenham (1624-1689) and Sennert, both of whom believed that gout was caused by some morbid matter in the blood stream. Thus, where seventeenth-century medical opinion is concerned, we find an interesting though tenuous connection between Milton's blindness and his gout. Just as a redundant humor in his brain, known as "gutta serena" or clear drop because outwardly it was invisible, flowed into the optic nerve and, gathering there, obscured his vision, so some unknown morbid humor periodically discharged, drop by drop, into the affected joints and was responsible for his gout attacks.[3]

While Milton frequently refers to his blindness, sometimes in specific detail,[4] he never refers to his gout.[5] Our knowledge that he had the disease rests in part upon a handful of brief statements to that effect by John Aubrey, the Anonymous Biographer, Christopher Milton, and the

429, and Fletcher McPhedran, "Disorders of Metabolism," *The Practice of Medicine*, ed. Frederick Tice (Hagerstown, 1952), IX, 1-34. I have also drawn on E. Neuwirth, "Milestones in the Diagnosis and Treatment of Gout," *Archives of Internal Medicine*, LXXII (1943), 377-387, and Maurice A. Schnitker, "A History of the Treatment of Gout," *Bulletin of the Institute of the History of Medicine*, IV (1936), 89-120.

[3] For a detailed account of the older history of gout see Armand Delpeuch, *La Goutte et le Rhumatisme* (Paris, 1900).

[4] His letter to Philaras, the *Second Defence*, *Sonnet XXII* to Cyriack Skinner, and the invocation to *Paradise Lost*, Book III, come readily to mind.

[5] Unfortunately, there is, at the most, only one extant private letter (addressed to Peter Heimbach and dated August 15, 1666) written during the years when, as we shall see later, Milton was suffering from the gout.

servant girl, Elizabeth Fisher.[6] From Richardson we learn that "his Hands and Fingers [were] Gouty, and with Chalk Stones" (p. 203)[7] and, since chalkstones[8] (or to give them their medical name, "tophi") are the sole pathological proof of gout, Richardson's testimony is therefore the only proof positive that Milton actually had the gout. His testimony is invaluable in other ways, for the fact that Milton had tophi shows that the disease was well advanced and permits us, therefore, to reconstruct the ordeal that he went through.

The course of gout follows a well established pattern in terms of which, and thanks to the details provided by Richardson, it is possible not only to describe the nature and extent of Milton's sufferings but to establish with reasonable accuracy the approximate year when they began. Following this pattern, the initial gout fit would have thundered in on Milton, completely without warning, in the dark of night, at about 2 A. M., striking in all probability at his right big toe joint.[9] The pain would have been agonizing. According to Sydenham, himself a victim of the disease from the age of 25, the pain insinuates itself among the bones of the tarsus and metatarsus, "whose Ligaments it seizes, sometimes resembling a violent stretching or tearing those Ligaments, sometimes the gnawing of a Dog." The part affected suffers "such a quick and exquisite Pain, that it is not able to bear the Weight of the Cloaths upon it, nor hard walking in the Chamber" (p. 343).[10] The toe joint would have swollen rapidly, have become hot and shiny to the accompaniment of a rise in Milton's temperature to about 102° or 103°. By morning the pain would have subsided and the day have been passed in relative comfort.

[6] Aubrey: ". . . only towards his later end he was visited wth the Gowte spring & Fall" (p. 5); the Anonymous Biographer states that "Hee dy'd in a fitt of the Gout" and adds that "hee had bin long troubl'd with that disease" (p. 33); Christopher Milton declared that when he visited his brother, in all probability for the last time, about July 20, 1674, he found him "then ill of the gout." (See David Masson, *The Life of John Milton*, VI [1880], 728.) In connection with the court proceedings relating to Milton's verbal will, Elizabeth Fisher testified that on an unspecified afternoon in July, 1674, he "was then indisposed in his body by reason of the distemper of the gout which he had then upon him." (See Masson, VI, 728-729.)

[7] Richardson attributes his information to the elderly Dr. Wright, who visited Milton when he was living at Bunhill.

[8] In 1797, William Hyde Wollaston found that the material obtained from tophi contained uric acid. Previously it was believed that they consisted of chalk, and they had therefore been called chalkstones.

[9] Early attacks of gout are said to be usually monarticular; it is possible, however, that the left big toe joint, or the heel or ankle was affected in the initial attack.

[10] All citations from Sydenham are from *The Whole Works of that Excellent Practical Physician Dr. Thomas Sydenham*, transl. John Pechey, 11th ed. (London, 1740).

That night the attack would recur, affecting either the same toe joint, or perhaps the other, or perhaps even the heel or ankle, to be again followed by relative comfort during the succeeding day. The acute attack, or gout "fit," usually lasts from 5 to 8 days, disappearing as rapidly as it struck. By the tenth day, Milton would have been able to move around freely, without pain.

A period varying in length from a few months to several years, but as a rule lasting 2 or 3 years, would have elapsed before the next attack. During the interval between attacks, Milton's general health might actually have improved. Aretaeus of Cappadocia (fl. 200 A. D.) records the case of an athelete who, although afflicted by the disease, during the interval between attacks won the race at the Olympic games.[11] The next attack, when it came, would have struck as rapidly as the first, under approximately the same circumstances, and would have involved either the same or other joints, to disappear as rapidly as it came. As the disease progressed, the attacks would have become more frequent, tending to occur every 6 months, particularly in the spring and fall.[12] This is precisely what happened, for we learn from Aubrey that "towards his later end he was visited with the Gowte spring & Fall" (p. 5). More and more joints, such as the knees, fingers, wrists, and elbows would gradually have been affected and, as a result of repeated acute seizures occurring over a period of many years, some of Milton's joints would have become permanently stiffened and distorted. About 8 to 10 years after the onset of the disease, the palpable and visible deposits known as tophi appear on the joints most severely affected so that, when the fingers are involved, they look "like a Bunch of Parsnips."[13] That the disease reached this stage with Milton we know from Richardson's comment about the chalkstones on his hands and fingers (p. 203).[14] Since the feet are usually first affected, it is reasonable to assume that the joints of Milton's feet and toes were also deformed by the presence of tophi. With the appearance of the tophi he would have reached a stage where he was never free from

[11] *The Extant Works of Aretaeus, the Cappadocian*, ed. and trans. Francis Adams (London, 1856), p. 365. Aubrey notes that except for his gout attacks Milton "was very healthy, & free from all diseases" (p. 5).

[12] The pain continues to be intense. According to Sydenham, just as the patient is going to sleep, he "suddenly feels a Blow as it were of a Club breaking in Pieces the Metatarsus" (p. 347).

[13] Sydenham, p. 345.

[14] Sometimes the tophi break through the skin and then, to quote Sydenham, "naked Stones, like unto Chalk or Crabs-eyes, appear" (p. 345). Milton, fortunately, seems to have been spared this development.

pain and would have lost much of his former mobility. Walking, for instance, would have been both painful and difficult. However, within the limits of his disability he would have remained mentally and physically normal.

It is interesting to note that Milton followed the treatment which Sydenham prescribed and that in following it he did all that was possible in the light of seventeenth-century medical knowledge to retard the progress of the disease. Whether he followed this treatment because either he or Dr. Paget knew Sydenham it is impossible to say.[15] Sydenham, to whom belongs the distinction of being the first to distinguish gout from other forms of arthritis and from rheumatism, believed that gout attacks were Nature's way of "exterminating the peccant Matter by depositing it in the joints, and afterwards voiding it by insensible Transpiration" (p. 351). He was therefore opposed to attempts at checking acute attacks or curbing the disease's natural development. Specifically, he was opposed to the remedial methods then commonly proposed, namely, bleeding, purging, and sweating. Now Aubrey, it will be remembered, remarks that Milton "seldome tooke any Physique, only sometimes he tooke Manna" (p. 5), and, as James Holly Hanford has pointed out,[16] the strong implication is that Milton ended up by largely renouncing physic and discontinuing vain attempts to cure his blindness. It would therefore seem highly probable that he also avoided attempts to cure his gout by the bleeding, purging, or sweating so resolutely opposed by Sydenham. One is relieved to think that, for the same reason, he probably avoided the various nauseating nostrums commonly prescribed then for gout. For instance, Mayerne, physician to James I, recommended the filings from the skull of a person who had not been buried. Salts distilled from human bones were also a popular prescription.[17]

[15] There is no evidence that Milton knew Sydenham. While Dr. Paget's library contained two works by Sydenham, his *Observationes* and *De Curatione* (see James Holly Hanford, "Dr. Paget's Library," *Bulletin of the Medical Library Association*, XXXIII [1945], 92), it did not contain his treatise on the gout, *Tractatus de Podagra et Hydrope*, which was published in 1683, 4 years after Paget's death. It is, however, possible that Paget knew Sydenham, personally or professionally, and that he might have consulted him about Milton, passing along to his patient the benefit of Sydenham's advice. Actually, the regime that Milton followed represents no departure from his lifelong abstemious and temperate habits. It is therefore entirely possible that in following the treatment prescribed by Sydenham he was doing so independently as the result of these ingrained life habits.

[16] "John Milton Forswears Physic," *Bulletin of the Medical Library Association*, XXXII (1944), 23-34, and *John Milton, Englishman* (New York, 1949), pp. 160-161.

[17] Charles H. La Wall, *Four Thousand Years of Pharmacy* (Philadelphia, 1927), pp. 266, 335.

While Sydenham was also opposed to "hot Medicines and Diet, whereby the Humours are inflamed" (p. 356), he did recommend those which "are properly called Digestives"; as such, "they are very agreeable to the Stomach, they purify the Blood, and comfort the other Parts" (p. 357). Among them he lists the roots of angelica, elecampane, wormwood-leaves, the lessed centaury, germander, and ground-pine, which he felt would assist "Nature in duly performing her offices, either by strengthening the Stomach . . . or the Blood" (p. 356). Under the heading of "digestives" would surely come the manna, or exudate of the European flowering ash (*Fraxinus ornus*), which was used then as a mild laxative and which Aubrey notes that Milton sometimes took.[18] Sydenham also recommended moderation in meat and drink, including complete abstinence from all fermented liquors, and the avoidance of late hours. "I would persuade those that are subject to the Gout," he writes, "to go to Bed early, especially in Winter; and to rise early" (p. 370). Likewise he stressed the importance of regular bodily exercise, preferably out of doors, and particularly recommended horseback riding. Now Milton's temperance in matters of diet is well known. We know, too, that he avoided late hours and, in fact, not only went to bed early but rose early. He "went to bed about 9," writes Aubrey, who adds that "He was an early riser. Sc: at 4 a clock manè" (p. 6). From Aubrey we also learn that "After dinner he used to walke 3 or 4 houres at a time" and that "he alwayes had a Garden where he lived" (p. 6). Toland adds that "when Blindness and Age confin'd him . . . he had a Pully to swing and keep him in motion" (p. 194),[19] while Richardson in the unforgettable picture which he has left us of Milton in old age describes how he used to sit at the door of his house "in Warm Sunny Weather to Enjoy the Fresh Air" (p. 203). Had Sydenham been treating Milton, he would indeed have found him a model patient as, for that matter, would a modern physician, for in treating gout, he, too, would probably recommend regular hours, plenty of exercise, particularly out of doors, complete avoidance of alcohol, and moderate eating.

If Milton had lived a hundred years later he would have gained some relief during his gout attacks from the introduction of *Colchicum autumnale*, or meadow saffron, in 1763, by Baron Anton von Störck, physician to the Empress Maria Theresa. Known to Byzantine physicians of the fifth, sixth, and seventh centuries A. D. under the name of hermo-

[18] In the case of chronic gout Sydenham permitted mild purging (pp. 356-357).

[19] This is repeated by Richardson, who mentions that "after he was Blind he us'd a Swing for Exercise" (p. 204).

dactyl, colchicum subsequently fell into neglect because of the claim made that the plant was poisonous and caused death by suffocation. Baron von Störck, however, showed that small amounts of it could be safely administered and that it brought striking relief in acute gout attacks. Actually, Milton could have done little more than he did, for while vigilant adherence to a temperate regime, together with the wise use of the effective drugs, may retard the progress of the disease, today as in Milton's day, once gout has established itself in a person, "the disease," as Aretaeus pointed out, "sticks to him until death."[20] In Milton's case, cure was, of course, impossible; moreover, owing to the condition of seventeenth-century medicine he was denied the use of the only drugs that could have alleviated his pain. Only with death did his ordeal end.[21]

Since as yet nothing is known with certainty as to the exact nature of gout or the actual, underlying cause of the disease, it is impossible to indicate precisely why it should have struck Milton. Masson conjectured that there may have been some organic connection between his blindness and his gout (VI, 678); Dr. Colman Cutler attributed Milton's eye trouble and gout to a common cause, namely, streptococcic infection"[22] while Dr. William H. Wilmer believed that the gout was one of the possible contributing causes to his blindness.[23] These conjectures are interesting but, given the present lack of medical knowledge about the subject, not particularly rewarding, since they lack a demonstrable basis in fact.

When we turn, however, to the predisposing causes of gout, we find ourselves on somewhat firmer ground and able to draw more positive conclusions. Important among these predisposing causes, we are informed, are excessive use of alcohol, over-eating, and lack of adequate exercise. Further-

[20] *Extant Works*, p. 493.

[21] According to Aubrey's emendation, Milton died of a gout attack (p. 5), while according to the Anonymous Biographer, he died during a gout attack (p. 33). Death from gout, *per se*, is not common. Moreover, it is said to be rare in autopsy to find a sufferer from gout who does not show a marked thickening of the aorta and arteries throughout the body. Thus, while Milton may have died during the course of a gout attack, as the Anonymous Biographer records, it does not necessarily follow that, as Aubrey reports, gout was the immediate, direct cause of his death. It is more probable that, in connection with his gout, Milton suffered progressively from hardening of the arteries and weakening of his heart muscles, until the time came when his heart just stopped beating, cardiac failure rather than gout being the immediate cause of his death. This would help to explain the Anonymous Biographer's remark that he died "with so little pain or Emotion, that the time of his expiring was not perceiv'd by those in the room" (p. 33).

[22] See the manuscript letter quoted by Eleanor Gertrude Brown, *Milton's Blindness* (New York, 1934), p. 21.

[23] "The Blindness of Milton," *Bull. Hist. Med.*, I (1933), 85-106.

more, persons with a large frame and a tendency to obesity are the ones whom the disease usually strikes. If one were looking for a likely victim, one would therefore seek a large, prosperous, obese individual, who was not athletically inclined and who tended to eat and drink to excess.[24] Ironically enough, Milton is just about the last type of person who would come to mind, for on all these counts, severally and collectively, he should have been immune. Actually, the predisposing factors that appear to have operated in his case were his sex, since males are more likely to be affected than females, and heredity. It is the latter which I wish briefly to discuss.

Medical authorities are generally agreed that heredity plays an extremely important role, for it has been shown that in from 50% to 75% of the cases studied the disease existed in the ancestors.[25] Although there is no indication that Milton's parents suffered from the gout, nevertheless there is a record of gout in his immediate family which, from the standpoint of heredity, is significant. I refer not to his brother Christopher, or to his own children, all of whom seem to have been immune, but to his nephew, John Phillips, who is mentioned by the London bookseller, John Dunton, as being still alive in 1705, and able to "write you a *design* off in a very little time, if the gout . . . do not stop him."[26] Phillips himself corroborates Dunton's statement, for in one of the numbers of the *Monthly Mercury* he apologizes for the previous issue on the grounds that he "was then so violently affected with the gout, both in hands and feet, that it was as much as he could do to continue the series."[27]

In the absence of specific information either from Milton or his early biographers it is difficult to say precisely when he began to suffer from gout. Nevertheless, I believe that an approximate date can be established, and the attempt seems to be worth making if it enables us to visualize him more clearly during those years when he was suffering from the gout and to trace the development of the disease as it affected not only his daily habits but his literary activities. Since tophi in the majority of cases are supposed to develop only 8 or 10 years after the clinical onset of the disease and since we know that Milton had tophi when he died, the latest probable date for the initial attack would be 1666. In the absence of direct evidence, the search for the earliest probable date involves a more circumscribed approach. The famous letter to Philaras, written in 1654,

[24] See Tice, IX, 2. Gout is not necessarily confined to the prosperous.
[25] See Osler, p. 422 and Tice, IX, 2.
[26] *The Life and Errors of John Dunton* (London, 1818), I, 181.
[27] See Masson, VI, 769.

2 years after he had become completely blind, and describing in detail the physical symptoms connected with his blindness, makes no mention whatsoever of any gout attacks. If Milton had suffered such an attack, I find it difficult to believe that he would have omitted mentioning the fact in a letter noted for its detailed and scientific preciseness. I conclude, therefore, that by 1654, the gout had not yet struck in upon him. In his last extant letter, that written to Peter Heimbach on August 15, 1666, he categorically states that "by the blessing of God . . . I am still both alive and well, nor useless yet, I hope, for any duty that remains to be performed by me in this life" (XII, 113, 115).[28] In the light of this statement it would appear that, when he wrote to Heimbach, he had either not been attacked by the gout, or had suffered only the initial attack and was enjoying the 2 or 3-year period of respite that so frequently follows. Certainly it seems improbable that the disease had established itself to the extent that it had become chronic. Indirectly this is confirmed by Aubrey's remark that "only towards his later end" did the gout strike him in the spring and fall (p. 5). In short, the evidence strongly suggests that the initial attacks occurred at the earliest in 1664, at the latest in 1666.

All this indicates that the house in Bunhill, where Milton lived for the last 10 years of his life,[29] was the scene of his protracted ordeal with the gout. Though agonizingly painful, the early attacks would, as we have seen, been intermittent; within the limitations of his blindness and these periodic attacks he would, however, have lived a comparatively normal life for about the first 6 years of his residence there—let us say from 1664 to 1670. During this period he would have taken those daily walks in his garden after dinner, exercised on his swing or pulley in inclement weather, and played on the organ. Between the intermittent attacks of gout he was evidently well enough physically to finish *Paradise Lost* and to write *Paradise Regained*. However, during these years, Milton's gouty condition would have gradually but steadily deteriorated. The attacks would have become more frequent, some deformation of the joints of his hands and feet would have begun, and walking would have become painful; nevertheless, he would have retained a certain measure of mobility. We know that as late as 1670, led by the hand of Millington, the auctioneer of books, he was still able to wander painfully through the streets of London. *Samson Agonistes*, written during the latter part of

[28] All citations from Milton are from *The Works of John Milton* (New York, 1931-1938).

[29] Apart from two brief periods of residence at Chalfont St. Giles and at the house of Millington in Little Britain.

the 6-year period,[50] when the gout was increasingly fastening itself upon him, contains what I think are unmistakable references to this disease and indicates that it had by now become a major affliction. Thus, in one passage, Samson refers to the thoughts which

> Mangle my apprehensive tenderest parts, [624]
> Exasperate, exulcerate, and raise
> Dire inflamation which no cooling herb
> Or medicinal liquor can asswage.

In another, the Chorus describes how God inflicts upon his elect "Painful diseases and deformed,/ In crude old age" (699-700). Since theories have been advanced that *Samson Agonistes* was written during an earlier period in the poet's life, I should like to suggest that these references to the ravages of gout furnish additional support for the traditional dating of the poem.

The last 4 years of his life must have been ones of increasingly continous discomfort and pain. Tophi appeared around the joints of his hands and feet and, as they grew, he correspondingly lost mobility, until the time came when he was no longer able to find relaxation by walking in his garden or in the streets of London, by exercising with his pulley, or by playing the organ. When he wanted fresh air he was forced to find it by sitting, as Richardson describes him, "at the Door of his House . . . in Warm Sunny Weather" (p. 203). It must also have been during these final 4 years of his life, when the gout was causing him almost constant pain, that he told Dr. Wright "that was he Free from the Pain This gave him, his Blindness would be Tolerable" (pp. 203-204). Creative work under such circumstances could scarcely be expected. Nevertheless, his mental faculties remained unimpaired and he continued to work. He revised the 1667 edition of *Paradise Lost* for subsequent publication in 1674, and he managed to write *Of True Religion* and to translate from Latin the Polish manifesto entitled *A Declaration of the Election of this Present King of Poland, John the III.* There are, I think, few more moving incidents in literary history than the firing of these Parthian shots on behalf of lifelong principles by an aged man, enveloped in the night of total blindness and racked almost incessantly by the torments of gout.

The indomitable will that enabled Milton to undertake these last literary

[50] In assuming that *Samson Agonistes* was written after *Paradise Regained* I have followed James Holly Hanford—*John Milton, Englishman*, p. 200 and *A Milton Handbook*, 4th ed. (New York, 1946), p. 268—in accepting Ellwood's statement as decisive.

labors is matched only by the patience and indomitable courage with which he met the physical challenge of the gout. From time immemorial, sufferers from this disease have been noted for their irritability and short tempers. The Anonymous Biographer informs us, by contrast, that "though hee [Milton] had bin long troubl'd with that disease . . . yet was hee not ever observ'd to be very impatient" (p. 33). In his deposition of December 5, 1674, Christopher Milton testified that, when he visited his brother, in all probability for the last time, in July of that year, though "then ill of the gout," he was perfectly calm and spoke "without passion."[31] Not only did Milton discipline himself to endure his torments with patience and calm, but he summoned the resources of an Indian under torture who laughs at his tormentor. The servant girl, Elizabeth Fisher, testified that on an unspecified afternoon in July, 1674, when Milton was "indisposed in his body by reason of the distemper of the gout which he had then upon him," he was "very merry and not in any passion or angry humour."[32] From Aubrey we learn that he was "Of a very cheerfull humour" (p. 5), which, given the circumstances, is sufficiently remarkable and, what is still more remarkable, that "he would be chearfull even in his Gowte-fitts; & sing" (p. 5).

Milton has won men's admiration not only as a great poet and a tenacious fighter for what he believed to be the truth, but for the courage which he displayed under the great affliction of his blindness. May he not also claim their admiration for the fortitude and cheerfulness with which, up to the very end, he bore the long drawn out agony of gout?

[31] See Masson, VI, 728.
[32] See Masson, VI, 728-729.

DAVID HOSACK ON THE QUALIFICATIONS OF A PROFESSOR OF CHEMISTRY IN THE MEDICAL DEPARTMENT

With a Short History of the Professorship of Chemistry at Columbia College Medical Department (1776-1876), College of Physicians and Surgeons of New York (1807-1860), and Rutgers Medical College (1826-1830)

HERBERT S. KLICKSTEIN

In the early decades of the nineteenth century, the importance of chemistry in medical education was questioned by a faction of the medical faculty at the University of Pennsylvania.[1] The problem arose with the death of James Woodhouse (1770-1809), professor of chemistry, and the subsequent election of a successor. The issue of who should teach chemistry to a medical class, a chemist without a medical degree, or a physician without chemical training was to persist at the University of Pennsylvania until the mid-nineteenth century. A further extension of the controversy was the question whether the chair of chemistry should really be a part of the medical faculty; others went even to the extreme of recommending that chemistry be removed from the curriculum entirely. With the election to the chemistry chair (1809) of John Redman Coxe (1773-1864), both a physician and competent chemist, the arguments subsided, only to reappear in 1818 when Coxe resigned and the professorship was once again open.[2]

The vacancy in the chair of chemistry in 1818 brought forth the

[1] For full details see H. S. Klickstein, *Library Chronicle* (University of Pennsylvania), *16*, 64-80 (1950); *Bull. Hist. Med.*, *27*, 43-68 (1953); *Chymia*, *4*, 129-157 (1953).

[2] The outcome of the 1809 election was due to the efforts of Benjamin Rush (1746-1813) who had at one time been professor of chemistry at the University of Pennsylvania medical school (1769-1789), and who continued to exercise his influence on matters pertaining to the chemical chair until his death. Rush advocated the utility of chemistry to medicine, a stand he derived directly from his studies in Edinburgh under Joseph Black. The chemical contributions of Black are best evaluated in the following: W. Ramsay, *Life and Letters of Joseph Black*, London, 1918; M. Speter, in G. Bugge, *Das Buch der grossen Chemiker*, Berlin, 1929, vol. 1, pp. 240-452; J. Read, in A. Kent (editor), *An eighteenth century lectureship in chemistry*, Glasgow, 1950; J. A. Cranson, in A. Kent, *ibid.*, pp. 99-106; H. S. Klickstein, *Bull. Hist. Med., loc. cit.* When the chair was vacated in 1818 Rush was dead, which explains in part the outcome of the election and the controversy.

dispute of the relation of chemistry and medicine anew. It was advanced that the professorship need not be filled by a medical man, since it by right should be separated from the faculty of medicine; another group, as in 1809, advocated that only one who had received a medical education should hold the chair since it was his duty, as a member of the medical faculty, to pass upon the merits of the candidates for a degree. One small but nonetheless strong clique "considered chemical knowledge rather as an ornamental than an indispensible, or even useful part of medical education" and "thought the chair of chemistry ought to be separated from the medical faculty; and that the students should be exonerated from the *necessity* of attending to this branch of knowledge, when they had so many other branches to attend to, which were absolutely indispensible."[3] Against this controversial background three candidates presented themselves for the chemical professorship—Robert Hare (1781-1858), Robert M. Patterson (1787-1854), and Thomas Cooper (1759-1839). Hare was a chemist,[4] but had no medical degree, a fact that drew considerable derogatory comment.[5] Patterson was a physician and this qualification was stressed in his application and recommendations.[6] Thomas Cooper was a proficient chemist as evidenced by his papers and books on the subject; he also made claim to having acquired a complete medical training although he had been awarded no formal academic degree. Cooper presented an honorary degree of Doctor in Medicine from the University of New York as proof of competence.[7] The trustees of the University

[3] T. Cooper, *A discourse on the connexion between chemistry and medicine*, Philadelphia, 1818, p. v.

[4] E. F. Smith, *The life of Robert Hare, an American chemist (1781-1858)*, Philadelphia, 1917.

[5] Coxe himself, just prior to his resignation, wrote of the qualifications of a professor of chemistry in a medical faculty: "Should I obtain the situation, the chemical chair will be open for competition—and 3 Candidates are mentioned—Dr. Patterson our present Profr. of Nat. philosophy—Dr. Cooper & Dr. Hare—the former of whom *only* one is a *regular Graduate*—the others having obt. degrees by special license from N York & Cambridge without undergoing a regular study & examination—and my opinion decidedly is that no one ought to hold a situation as Examiner of qualifications of any branch of Science, which he has not equally gone through all the preliminary steps—Thence you may imagine my wishes would favor the first—who, I doubt not would fill the chair with much credit & advantages" (Letter from John Redman Coxe to Dr. J. Norcom, Edenton, North Carolina, Philadelphia, May 29, 1818, Carson Ms., library of College of Physicians, Philadelphia).

[6] Patterson received his M. D. at the University of Pennsylvania (1808), studying later in London and Paris.

[7] See D. Malone, *The public life of Thomas Cooper, 1783-1839*, New Haven, 1926, p. 231, and H. S. Klickstein, "Thomas Cooper's claims as a physician," (in preparation). W. J. Bell, Jr., has succinctly portrayed Cooper in the *J. Hist. Med. & Allied Sci., 8*, 70-87 (1953).

were besieged with documents in support of each of the three candidates. After much consideration and pressure from many quarters,[8] Robert Hare was elected to the vacant chair of chemistry (September 18, 1818). He agreed, however, to relinquish his privilege of judging the qualifications of the medical students when they were examined for their degree and that he would not sign their diplomas, "confining himself simply to the examination of the students—in chemistry only—the rest of the faculty, reserving themselves the exclusive right of deciding upon the result of such examination, which was to take place in their presence." [9] The chair of chemistry was relegated, therefore, to a position of little importance.

Of especial interest in this connection is a letter from David Hosack (1769-1835),[10] professor of the theory and practice of physic at the College of Physicians and Surgeons in New York to William Rawle (1759-1836) [11] a trustee of the University of Pennsylvania; [12] it pertains to the qualifications of a professor of chemistry in the medical department and was written, apparently, in answer to a query from Rawle as to what practices were followed at the College of Physicians and Surgeons in the selection of a candidate for the chair of chemistry. The epistle, dated August 19, 1818, reached Rawle in the midst of deliberations for the selection of a successor to Coxe.[13] It manifests the quandary of the trustees

[8] The medical students were goaded into petitioning the trustees on two occasions not to elect a non-medical man; a mass resignation was promised if the University did not heed the student demands. For details see H. S. Klickstein, "Two student petitions of the University of Pennsylvania School of Medicine (1818) against the election of a non-medical candidate to the professorship of chemistry" (in preparation).

[9] See above, footnote 3. The origin and mode of these examinations are discussed by W. J. Bell, Jr., in *Transactions & Studies of the College of Physicians of Philadelphia, 21*, 14-24 (1953).

[10] *D. A. B.*, vol. 9, 1932, pp. 239-240. Hosack entered Columbia College in 1786, but received a degree in arts at the College of New Jersey (Princeton) in 1789. Medical instruction followed in New York under Nicholas Romayne, Philip W. Post, and Samuel Bard, and was continued under Benjamin Rush in Philadelphia. These studies were supplemented by a trip abroad in 1792 where he broadened his knowledge of medicine, botany (Edinburgh) and mineralogy (London). In 1795 Hosack became professor of botany at Columbia College and two years later, professor of materia medica, holding both positions until 1811 when he resigned to accept the chair of the theory and practice of physic at the College of Physicians and Surgeons. When Rutgers Medical College was founded (1826), Hosack was president and professor of therapeutics and materia medica.

[11] *D. A. B.*, vol. 15, 1935, pp. 400-401. Rawle, a lawyer and philanthropist, was elected a trustee of the University of Pennsylvania in 1795 and retained the position nearly forty years.

[12] Letter from David Hosack to William Rawle, Esquire, New York, August 19, 1818. ALS, 8 pp., *University Papers*, X, 1818, p. 59, Archives of the University of Pennsylvania.

[13] The reason that Rawle wrote to Hosack might be explained by a reference to the

and their apparent good faith in seeking guidance elsewhere. As a document the Hosack letter, which is reprinted in full below, is valuable since it portrays the state of thinking on the relationship of medicine and chemistry at not only the College of Physicians and Surgeons, but Columbia College as well, for Hosack was at one time a member of its medical faculty. He was later also to help found Rutgers Medical College. A survey of the professorship of chemistry at these institutions is, therefore, in order so that Hosack's opinions on the qualification of a professor of chemistry in the medical department can be evaluated in the light of his past education, friendships, and experience.

The faculty of medicine of Kings College, destined to be Columbia, was originally organized in 1767, two years after the establishment of a like group at the University of Pennsylvania.[14] An opening notice of the medical school offered both a bachelor's and doctor's degree with requirements "conformable to the Practice of the most *Celebrated Universities* of Europe."[15] A "compleat knowledge . . . of the necessary Branches of *Natural* Philosophy" was expected of all candidates. James Smith (d. 1812),[16] a physician, was the first professor of chemistry and materia medica, and he delivered (November 3, 1767) an introductory lecture "which for Elegance and Sublimity, met with universal Approbation."[17]

latter, in a letter of application for the professorship of chemistry at the University of Pennsylvania, written by Thomas Cooper to the trustees but sent directly to Rawle. This document, in which Cooper states that chemistry should be taught by a physician, sets forth Cooper's claims as a Doctor of Medicine in the course of which he remarks: "I have also been honoured with the Degree of Doctor in Medicine by the University of New York, on the motion, as I understand, of Drs. McNeven and Hosack, gentlemen sufficiently competent to speak of my title to the distinction thus conferred" (Letter from Thomas Cooper to the Trustees of the University of Pennsylvania, August 4, 1818, University Papers, X, 1818, p. 55, Archives of the University of Pennsylvania. Also in printed form, *ibid.*, p. 56). Hosack had also studied at the University of Pennsylvania at one time and was well known in Philadelphia circles.

[14] The following sources should be consulted for the history of Columbia University and its medical faculty: J. L. Chamberlain (editor), *Universities and their sons, history, influence and characteristics of American universities* . . . , Boston, 1898, vol. 1, pp. 571-731; *Officers and graduates of Columbia University, . . . General catalogue, 1754-1900*, New York, 1900; *A history of Columbia University, 1754-1904* . . . , New York, 1904, particularly Book One, "Kings College and Columbia College," by J. H. Van Amringe, pp. 1-195; *Catalogue of officers and graduates of Columbia University from the foundation of Kings College in 1754*, New York, 1906; J. J. Walsh, *History of medicine in New York*, New York, 1919, 5 vols., particularly vol. 2; W. F. Norwood, *Medical education in the United States before the Civil War*, Philadelphia, 1944, pp. 109-124.

[15] *New York Gazette*, September 21, 1767.

[16] J. Thacher, *American medical biography: or memoirs of eminent physicians who have flourished in America* . . . , Boston, 1828, vol. 2, p. 95.

[17] *New York Mercury*, November 9, 1767.

Little is known about Smith's chemical course, which he gave until 1770 when he resigned, although it was reported as too theoretical and fanciful.[18] Smith had acquired his medical training chiefly in Europe, first in Edinburgh and then Leiden; at Edinburgh, Smith took William Cullen's (1710-1790) course in chemistry twice.[19] Cullen was an excellent chemist and one who presented chemistry in a close relationship to medical studies.[20] From Edinburgh Smith went to Leiden and was graduated a Doctor of Medicine in 1764.[21] While at Leiden, Smith probably attended the lectures on chemistry; his indoctrination in chemistry then was twofold and curiously reversed as to origin since Edinburgh was markedly influenced by Leiden practices. Although Boerhaave had died in 1738 his influence was still strong; he had been succeeded by H. D. Gaubius (1705-1780). This suggests that Smith probably taught the utility of chemistry to medicine in his presentations at Kings College. Peter Middleton (d. 1781) [22] succeeded Smith to the professorship (1770), which he retained until 1776 when the exercises of the college were suspended because of the Revolutionary War. No clue has survived as to Middleton's doctrines; he had matriculated at St. Andrew's University as an M. D.[23] and was regarded as an adroit medical man.[24]

[18] See above, footnote 16.

[19] Cullen's class book of "Students in the College of Chemistry" lists him for 1761-1762 and 1762-1763; see W. J. Bell, Jr., *Proc. Am. Phil. Soc., 94*, 275-281 (1950). It is noteworthy that Smith attended the same chemistry course as John Morgan and Samuel Bard; the former was one of the founders of the University of Pennsylvania medical school (1765), and was its first lecturer in chemistry. Morgan realized the value of chemistry to medicine, no doubt the direct influence of his Edinburgh studies, expressing his views in the course of *A discourse upon the institution of medical schools in America; . . .* (Philadelphia, 1765); for details see H. S. Klickstein, *Bull. Hist. Med., loc. cit.*, pp. 46-47.

[20] J. Thomson, *An account of the life, lectures, and writings of William Cullen, M. D.*, Edinburgh, 1832-1859, 2 vols. Cullen studied chemistry under Andrew Plummer at Edinburgh (whom he succeeded in 1755); the latter was trained by the renowned Boerhaave at Leiden, well recognized for his interpretations of medicine in the light of chemistry. See H. E. Sigerist, *Nedrl. Tydschrift voor Geneeskunde, 82*, 4, 4822-4828 (1938), and A. Kent, pp. 15-27, and D. Guthrie, pp. 49-65, in A. Kent, *loc. cit.* Cullen was Joseph Black's teacher of chemistry.

[21] Smith's inaugural dissertation was entitled, *De febribus intermittentibus* (1764). See R. W. Innes Smith, *English-speaking students of medicine at the University of Leyden*, Edinburgh, 1932, p. 216.

[22] J. Thacher, *op. cit.*, pp. 384-385.

[23] No chemistry was given at St. Andrew's as a separate subject until 1811; the chair of chemistry was founded in 1808. Middleton received his chemical training as a part of the lectures in natural philosophy. The latter chair dates from 1747 although instruction in natural philosophy can be traced back to 1450. For details see *University of St. Andrews. Handbook of the United College*, St. Andrews, 1940, p. 26.

[24] Some concept of Middleton's thinking can be gauged from his *A medical discourse*,

Following the war King's College reorganized with an act confirming the original charter but changing its name to Columbia College. Samuel Bard (1742-1821)[25] was elected (1784) to the now separate professorship of chemistry but resigned after a year to lecture on natural philosophy (1785-1786), only to reassume the chemical chair the following year. In Edinburgh, from which Bard received his M. D. degree,[26] he was listed by Cullen in the class book of "Students in the College of Chemistry" as attending the chemistry course three times (!) from 1762-1765.[27] Bard's enthusiasm on hearing Cullen's first lectures (1762) is apparent from a letter to his father: "Doctr. Cullen has now finished the first Part of his Course upon the objects of Chemistry, and has entered upon the second or the opperations (sic) of Chemistry. He began with acquainting us, that the changes of the qualities of Bodies, produced by Chemistry, were all of them produced by Combination or Seperation (sic) which he proves in a maner (sic) not only Conclusive but at the same time very entertaining . . ."[28] Cullen's influence on his students was unquestionably strong, and as with Smith, Bard brought the Edinburgh teachings back to America. The connection of chemistry and medicine was stressed by Bard in his *Discourse on medical education* (p. 15).[29]

or an historical inquiry into the ancient and present state of medicine. The substance of which was delivered at opening the medical school, in the city of New York, New York, 1769, p. 58: "CHYMISTRY, and BOTANY, with Respect to *Medicine*, may in some Sence be considered, as *Subdivisions* of the MATERIA MEDICA; with which they both serve to make us more intimately acquainted. By CHYMISTRY, the Nature and Properties of all such Substances as are used in *Medicine*, are explored; and various powerful Remedies are thereby prepared from the VEGETABLE, FOSSILE, and ANIMAL Kingdoms, by means of *Fire*, and *Solvents*. By CHYMISTRY, many curious Discoveries, and useful Improvements are made in NATURAL PHILOSOPHY. It is a Study, no less pleasing than advantageous to the PHYSICIAN; and an Amusement equally curious and entertaining to the GENTLEMAN and SCHOLAR." Middleton was professor of the theory of physic when the address was given. See W. B. McDaniel, *Bull. Hist. Med., 26*, 45-53 (1952), for details.

[25] J. Thacher, *op. cit.*, pp. 103-143, and *D. A. B.*, vol. 1, 1928. pp. 598-599. Bard studied at King's College, then in London and Edinburgh, taking his M. D. at the latter institution. He was a classmate of John Morgan (see above, footnote 19) and James Smith. Returning to America, he was a member of the first medical faculty at King's College initially holding the chair of the theory and practice of physic. David Hosack trained, in part, under Bard, and later they were in medical partnership.

[26] Bard's thesis was *De viribus opii*, Edinburgh, 1765.

[27] See above, footnote 19.

[28] Letter from Samuel Bard to John Bard, Edinburgh, December 29, 1762. Bard Collection, New York Academy of Medicine. Printed in W. J. Bell, Jr., see above, footnote 19.

[29] *Discourse on medical education delivered at the medical commencement of the College of Physicians and Surgeons of the University of the State of New-York, on the sixth of April, 1819*, New York, 1819. Facsimile edition. New York, 1921.

. . . through the important discovery of the circulation of the blood, by Harvey, and the introduction of a strict philosophy, by Bacon, in which opinion was made to give place to observation, and a patient investigation of facts was substituted for the quibbles of sophistry, the science of medicine became again placed on its proper basis—nature, observation, and experience. From this moment, anatomy, chemistry, natural history, and natural philosophy, which, although they had long been in the train of medicine, had rather followed, than directed her researches, were impressed into her service, and made to take the lead in a medical education; nor until he has made considerable progress in these, can the student of medicine be properly qualified even to begin what is the great object of his pursuit, the study of diseases, and their cure.

It seems fair to postulate that Bard taught chemistry with its applicability to medicine in mind; he unquestionably indoctrinated Hosack with a similar approach.

In the interim, 1785-1786, when Bard resigned the chemical post temporarily to teach natural philosophy, the chair of chemistry was occupied by Henry M. Moyes (1750-1807).[30] Moyes was a celebrated Scottish chemist, who despite being blind since the age of three, had attained wide popularity in England through his lectures.[31] His avid interest in chemistry was inspired by Joseph Black[32] at Edinburgh. Of his lectures, a contemporary wrote:[33]

As he was the first blind man . . . to lecture on chemistry, the novelty of this proposal excited curiosity and attention . . . His voice was good, his articulation excellent . . . His art in performing experiments excited great interest. His lectures attracted the most eminent scholars of the realm . . . He was a striking instance of the power the human soul possesses of finding resources of satisfaction even under the most rigorous calamities . . .

[30] E. V. Armstrong and C. K. Deischer, *J. Chem. Ed.*, *24*, 169-174 (1947).

[31] For outline of lectures in England, see H. Moyes, *Heads of a course of lectures on the philosophy of chemistry and natural history*, London, 1780 (?).

[32] See above, footnote 2. Moyes apparently acquired an M. D. at Edinburgh for he uses this title on his publications (see below, footnote 34). He was a member of the famous Lunar Society at Birmingham, among whose members of chemical interest were William Withering, James Watt, Erasmus Darwin, Samuel Galton, William Murdock and Joseph Priestley. The recommendation of Moyes to Sir Joseph Banks by Priestley is interesting: "I take the liberty to recommend to your notice Dr. Moyes, who is at the same time an excellent lecturer in philosophy, being quite blind, yet superior to most who see. He is a man of most amiable disposition, and tho' he cannot himself make many experiments, he gets them made by an assistant, so that none of his hearers ever complain on that account. . ." (Letter from Joseph Priestley to Sir Joseph Banks, Birmingham, February 6, 1783, in H. C. Bolton, *Scientific Correspondence of Joseph Priestley*, New York, 1892, p. 52).

[33] G. Bew, *Memoirs of the Literary and Philosophical Society of Manchester*, 1, (1789).

Moyes, stimulated by his success in England, decided to visit America. Arriving in Philadelphia on February 3, 1785, he immediately launched a course of 21 lectures on the "Philosophy of Chemistry and Natural History" (three lectures each week), that met with popular acclaim. A syllabus of these lectures was published;[34] the lectures were divided into eight sections with Part VIII on animal substances which embraced digestion, digestive juices, nutrition, blood, milk, honey, beeswax, etc. Moyes made many friends among the Philadelphia group, especially Benjamin Rush. From Philadelphia, Moyes traveled to Baltimore (May, 1785), again presenting public lectures on chemistry, and then, apparently, he went to New York, a fact not generally known, where he accepted the chemical and natural history lectureship at Columbia College. No information relative to his New York activities is available, although his presentations were probably not unlike those outlined in his syllabus. It is known that he returned to Philadelphia in January, 1786, to lecture again (20 lectures on natural history), and he then appeared in Charleston, South Carolina, where a course of 12 lectures followed; Moyes departed from America on May 29, 1786. Assuredly, with the many commitments that Moyes filled in his short stay in America, he had little time for activities at Columbia College. His influence, if any, on the Columbia group, was slight; it is worthy of notice that Moyes was Edinburgh trained.

With the departure of Moyes in 1786, Samuel Bard reassumed the professorship of chemistry. When he resigned in 1787, the lectureship remained vacant until 1791. In the period of 1787 to 1791 the teaching of chemistry at Columbia College was dormant. In fact, medical instruction as a whole was minimal, and probably no extensive training was provided from the time of the outbreak of the Revolutionary War. In 1787, a legislative act was passed reconfirming the royal charter with a group of trustees to manage a corporation, now designated as "The Trustees of Columbia College in the City of New York." An overall body was created—"Regents of the University of the State of New York"—with the power to visit all colleges, academies, and schools and to confer degrees and grant diplomas. The laxity on the part of Columbia's medical faculty aroused the more progressive physicians of New York, especially Nicholas Romayne (1756-1817)[35] who petitioned the regents of the Uni-

[34] *Heads of a course of lectures on the philosophy of chemistry and natural history: by Henry Moyes, M. D. . . .*, (Philadelphia, 1785).

[35] J. Thacher, *op. cit.*, pp. 25-29; *D. A. B.*, vol. 16, 1935, pp. 127-128. Romayne received an M. D. degree at Edinburgh (1780) and continued his education on the continent. His thesis, *De puris generatione* (Edinburgh, 1780), foreshadowed his interests and approach.

versity of the State of New York to establish a new medical school. In March, 1791, the organization of a College of Physicians and Surgeons was authorized, but Columbia, incensed by this action, requested an opportunity to reestablish its medical faculty. The charter was thereupon revoked, and Columbia embarked on a new program. The Trustees appointed a committee (April, 1791) to investigate the teaching of the science of medicine in the College. This body reported that it would be "proper at present to have the Practice of Physic read in Columbia College and that Dr. Romayne . . . be nominated Lecturer in those Branches." [36] Romayne, however, only lectured until May, 1792, when the Regents approved a permanent plan of reestablishment for the medical faculty which designated a Dean and eight Professors; Samuel Nicoll (d. 1796) [37] was chosen professor of chemistry.

In what manner Romayne presented chemistry in medicine is not known [38] but his Edinburgh associations should be remembered; he also had Hosack as a student at one time. Romayne continued to give private instruction in chemistry after his disassociation with the Columbia faculty. Nicoll held the chemistry post for two years tendering his resignation in 1794. From 1794 to 1802 the chair of chemistry at Columbia College was not filled. Chemistry was taught by the professor of "Natural History, Chemistry, Agriculture and other Arts depending thereon" a position created by the Trustees in June 1792. This new professorship was intended to

> comprehend the Philosophical Doctrines of Chemistry and Natural History under the following Heads—
>
> 1. Geology, or the natural and chemical History of the Earth;
> 2. Meteorology, or the natural and chemical History of the Atmosphere;
> 3. Hydrology, or the natural and chemical History of Waters;
> 4. Mineralogy, or the natural and chemical History of Fossil Substances;

He was one of the original members of the board of regents of the University of the State of New York, and a member of the Columbia College trustees' first board (1787-1793). In 1785, he was made professor of the practice of physic in the medical school of Columbia College, and in 1791-1792 was lecturer in chemistry, anatomy, and the practice of physic. When the College of Physicians and Surgeons was founded, he took an active part in its administration and was its first president. Romayne was one of Hosack's early teachers.

[36] J. L. Chamberlain, *op. cit.*, pp. 627.

[37] Nicoll, of whom little is known, is listed as a graduate of King's College (1774), therefore, he studied chemistry under Peter Middleton. He also received an M. D. from Edinburgh in 1776, writing a dissertation entitled *De arthritide* (Edinburgh, 1776).

[38] For generalities see Romayne's *An address, delivered at the commencement of the lectures, in the College of Physicians and Surgeons in the city of New York*, New York, 1808.

5. Botany, or the natural and chemical History of Plants;
6. Zoölogy, or the natural and chemical History of Animals.

The course to be so arranged with the Professor of Mathematics and Mechanical Philosophy as to form a complete sett of doctrines and facts in the department of experimental Physics.[39]

Samuel Latham Mitchill (1764-1831) was elected (July 9, 1792) to the chair.

The choice of Mitchill was fortunate for he was destined to become one of the leading medical and scientific men of the early nineteenth century, and he was aware above all of the very close ties of chemistry and medicine.[40] Mitchill had studied medicine for three years with Samuel Bard in New York City, and in 1783 went to Edinburgh where, in 1786, he received an M. D. degree.[41] At Edinburgh, Mitchill attended the chemistry lectures of Joseph Black with diligence. When he returned to America, Mitchill, however, did not teach the *anti-phlogistic* doctrines advocated by Black but "taught the reformed *Chemistry* of the French—June, 1792." [42] Mitchill was in fact one of the earliest proponents of Lavoisier in America;[43] and should in any case be credited with being the first to use actively the new chemical nomenclature of Lavoisier in America as a part of his lectures.[44] Although Mitchill did not teach *anti-phlogistic* chemistry, he did retain all of Black's teachings of the relationship of chemistry and medicine;[45] this

[39] J. L. Chamberlain, *op. cit.*, p. 628.

[40] Mitchill's medical and scientific work is best evaluated in C. R. Hall, *A scientist in the early republic. Samuel Latham Mitchill, 1764-1831*, New York, 1934; for chemical work see E. F. Smith. *Samuel Latham Mitchill, a father in American chemistry*, New York, 1922, and *Chemistry in America, chapters from the history of the science in the United States*, New York, 1914, pp. 148-150; article by L. C. Newell, *D. A. B.*, vol. 13, 1934, pp. 70-71. Also see J. W. Francis, *Reminiscences of Samuel Latham Mitchill, M. D., L. L. D.*, New York, 1859.

[41] Mitchill's thesis was, *Circa ovi genituram animalis*, Edinburgh, 1786.

[42] *Some of the memorable events and occurrences in the life of Samuel L. Mitchill, of New-York, from the year 1786 to 1822*, New York (1822), p. (1)-2. C. R. Hall, *op. cit.*, p. 150, also lists a New York, 1826 issue with the events extended to 1826. This was Mitchill's own autobiographical list.

[43] Aaron Dexter (1750-1829), professor of chemistry at Harvard Medical School, may have been the earliest. For details consult I. B. Cohen, *Some early tools of American science*, Cambridge, 1950, p. 79, and *Chymia, 3*, 37-42 (1950).

[44] Fully discussed by D. I. Duveen and H. S. Klickstein in "The introduction of Lavoisier's chemical nomenclature into America," *Isis* (in press).

[45] The origin of Mitchill's introduction to Lavoisier's chemistry is difficult to ascertain since Black was still *phlogistic* when Mitchill was at Edinburgh. F. Pascal's comments on Mitchill's conversion in the course of his *Eulogy on the life and character of the Hon. Samuel Latham Mitchill, M. D. . . .* (New York, 1831, pp. 10-11) are noteworthy: "Mitchill commenced his career precisely at the juncture when the science was under-

is evidenced by the syllabus of his lectures which was published within his first year as professor in conformity with an order of the Trustees.

The syllabus entitled, *Outlines of the doctrines in natural history, chemistry and economics,*[46] is divided into seven sections: Introduction; I. Geology, with two parts, Part I. History of the general effects of "Heat" upon bodies, and Part II. History of the general effects of "Mixture" upon bodies; II. Meteorology; III. Hydrography; IV. Mineralogy; V. Botany; VI. Zoology. The lectures then conformed with the outline set forth by the Trustees. Throughout the *Outlines* Mitchill lectured in terms of Lavoisier's new chemistry, and the latter's chemical nomenclature is utilized in all presentations. In section I, "oxygenation" and "animation" are detailed with the application made evident in the fermentation of vegetable substances, in the putrefaction of animals, and in the respiration of animals. Section II covers at one point the effect of rarefied air and hydrogen gas upon vegetables and animals. Hydrography, section III, covers in part (p. 20) mineral waters: ". . . Very often medicinal—account of medicinal waters—SARAGHTOGA springs of New-York. LEBANON springs—experimental history of both of these—Sweet springs of Virginia . . . Artificial mineral water may be made more perfect than the natural—Bergman's dissertation on the analysis of waters . . ."[47] Under Botany the following were treated: vegetable poisons, colouring material of plants, fibrous parts of plants, saccharine substance of plants,

going a thorough change and reform, the successes of which he pioneered in this country, by promulgating, *ex-cathedra*, from the chair of Columbia College, the Lavoisierian nomenclature. This was the more meritorious, because having been the pupil of *Black* in Edinburgh, he might have consulted his prejudices, and have been pertinacious in maintaining the *phlogistic theory* of his master. And indeed he might well have been deemed excusable." The acceptance by Mitchill of Lavoisier's ideas is not so simple as it might first appear since he continued to use the term *phlogiston* and he later also introduced the septon theory into his works. In the controversy between Joseph Priestley and the *anti-phlogistonists* in America, Mitchill maintained an impartial stand (see T. L. Davis in *Studien zur Geschichte der Chemie. Festgabe für Edmund O. von Lippmann*. Berlin 1927, pp. 132-147, and *J. Chem. Ed.*, *4*, 176-183 [1927]). Despite these reservations Mitchill was an *anti-phlogistic* adherent—the differences were details particularly in terminology (C. R. Hall, *op. cit.*, pp. 19-30).

[46] *Outlines of the doctrines in natural history, chemistry, and economics. Which, under the patronage of the State are now delivering in the College of New York . . .*, New York, 1792.

[47] Mitchill and his analysis of Saratoga spring water is discussed by H. E. Sigerist, *Bull. Hist. Med.*, *13*, 545-549 (1943). A chemical analysis of the mineral water of Schooley's Mountain was also made by Mitchill in collaboration with W. J. Macneven, later professor of chemistry at the College of Physicians and Surgeons. (*Transactions of Literary and Philosophical Society of New York*, *1*, 593-657 (1815); also published separately for Society, 1813; reprinted in 1828 (New York) and 1845 (New York) by other publishers.)

saline parts of plants, product of vegetables by fermentation, astringent parts of plants, food, diseases of plants. Zoology, the last section, is subdivided into eight parts—I. Generation, II. Digestion, III. Secretion, IV. Respiration, V. Circulation, VI. Sensation, VII. Absorption, VIII. Irritability. The parts were all presented in relation to chemistry; IV under part VII, pp. 30-31, "Chemical history of different animal substances" lists 1. Blood, 2. Milk, 3. Fats, 4. Bile, 5. Saliva, 6. Pancreatic juice, 7. Sperm, 8. Urine, 9. Mucus, 10. Pus, 11. Biliary calculus, 12. Urinary calculus, 13. Muscles, tendons, and ligaments, 14. Stones.

Mitchill's first course in chemistry as demonstrated above, although not a formalized coverage of the subject, assuredly stressed the medical application of chemical principles. Although Mitchill was to elaborate more on pure chemistry in later years he always illustrated his lectures with examples to show the usefulness of chemistry to a physician. In July 1794 Mitchill, on behalf of a committee, made a report of "the present state of Learning in the College," [48] and in the course of the report summarized his own lectures (1794).

A Professorship of Economics was instituted in July 1792, and Samuel Latham Mitchill, M. D. appointed Professor. This course, of which a Syllabus [49] is published, is conducted upon the *new French* system. A few weeks ago, Mr. Mitchill gave an edition of the New Nomenclature of Chemistry, in French, German and English, for the use of the students. This Professorship comprises not only the classification and arrangement of natural bodies, but also treats of a great variety of facts which forms the basis of Medicine, Agriculture, and other useful arts, as well as of manufactures.

The "edition of the New Nomenclature of Chemistry" was the *Nomenclature of the new Chemistry* [50] published in 1794. In the introductory comments to this work Mitchill expounds on the recent chemical advances especially in their relation to medical phenomena. After a two-page (pp. 7-8) treatment of the new concepts of the composition of water it was pointed out (p. 9) that "this discovery of the composition of water

[48] *The present state of learning in the College of New York*, New York, 1794. J. L. Chamberlain, *op. cit.*, pp. 629-631.

[49] Mitchill is referring here to the *Outlines*, see above, footnote 46.

[50] *Nomenclature of the new chemistry. By Samuel Latham Mitchill, M. D. F. R. S. E. professor of chemistry and botany in the College of New York*, New York, 1794. This is one of Mitchill's rarest publications and generally missed in discussions of his chemical work. Mitchill also published a second work on chemical nomenclature in 1801, *Explanation of the synopsis of chemical nomenclature and arrangement: . . .* (New York) which is entirely different from the 1794 production. See D. I. Duveen and H. S. Klickstein, *A bibliography of the works of Antoine Laurent Lavoisier, 1743-1794* (in press), for full bibliographical details.

being now ascertained beyond all cavil or possibility of dispute, the most important inferences may be drawn from it, not only with respect to the explanation of inanimate, but likewise of animated bodies, both vegetable and animal, as well in health and disease, during life and after death. It goes a great way perhaps towards explaining the secretion of urine, the formation of halitus from the lungs, the insensible and sensible perspiration from the other parts of animals, and the curious and intraordinary production of watery fluids in diabetes and dropsies." Carbonic acid was considered in a like manner and it was emphasized that

> The better knowledge of the constituent parts of the animal solid than was understood before, has resulted from the new chemistry; the fact that the less or muscular part differs from the fat or oily merely by possessing one ingredient more, azote (nitrogen), to wit, is established by the ordinary process of making liver-oil from fishes . . . This discovery is pregnant with important applications to animal bodies, in their various states of marasmus and obesity, and perhaps throws great light on the process of nutrition . . .

Mitchill quotes Beddoes in the course of his comments (p. 10): "wherein chemistry is extensively applied to physic, it being capable as he says 'of unfolding the profoundest secrets of nature, and among the rest, the delicate play of living machinery.'"

From these few excerpts it appears certain that Mitchill was very much cognizant of not only the utility of chemistry to medicine but the latest progress in chemistry, particularly Lavoisier's new chemistry in its explication of physiological changes. The entire matter was reiterated in more detail by Mitchill in his preface to the American edition of Erasmus Darwin's *Zoonomia; or the laws of organic life* (vol. 1, New York 1796).[51] In 1797 Mitchill wrote another report on the state of medical learning in the College[52] and again the courses are outlined with the description of the chemistry lectures on p. 6. The entire presentation was now principally chemistry on the basis of his nomenclature book,[53] but the medical ramifications were still stressed. This is verified by an examination of two student notebooks taken at Mitchill's lectures.[54] Mitchill, it should be

[51] The two volumes of Part II were edited by Charles Caldwell who was the antithesis of Mitchill on the use of chemistry in medicine; see H. S. Klickstein, *Chymia, loc. cit.*

[52] *The present state of medical learning in the city of New York*, New York, 1797.

[53] See above, footnotes 44 and 50.

[54] *A chemical course of lectures delivered by Samuel Latham Mitchell (sic), late of Columbia College, Professor*, June 24–August 3, 1802, in the hand of George W. Bancker. There is another set with the same title also in the hand of George W. Bancker, but copied from the notes of some other student. Both are in the library of the New York Academy of Medicine. These represent Mitchill's last lectures on chemistry at Columbia College.

noted, was also elected professor of botany of 1793 and he thereafter separated this subject material from his chemistry lectures; when Mitchill resigned the botany chair in 1795, David Hosack was elected to fill the vacancy. The two were in close contact with each other and exchanged ideas. In 1802, Mitchill retired from the chair which was still termed "natural history, chemistry, agriculture and the other arts depending thereon" in order to accept a seat in Congress. The chair that Mitchill left ceased to exist with his resignation; the chair of chemistry vacant since Nicoll in 1794 was again activated and James S. Stringham (1775-1817) was elected its occupant (November 18, 1802).

Stringham[55] was graduated from Columbia in 1793 where he studied under Mitchill; he then worked in medicine under Samuel Bard and David Hosack, subsequently proceeding to Edinburgh where he received the degree of M. D. in 1799.[56] Since Black died in 1799, it is not at all certain whether Stringham attended his lectures. A short time after his return to America he was elected to the chemistry professorship which he held until 1813. Although little remains to trace his mode of teaching it is known that he was not particularly satisfied with lecturing on chemistry; he therefore began to study legal medicine and was later elected to the first chair of medical jurisprudence in the United States (College of Physicians and Surgeons).

Despite the efforts of the Columbia medical faculty to improve their instruction after the reorganization of 1792 the teaching never excelled, although as has been demonstrated Samuel L. Mitchill presented a rounded course in chemistry. This non-fulfillment of the obligations of Columbia College was recognized by the New York Medical Society which in 1807 requested that a new medical school be established by incorporating the Society as a College of Physicians and Surgeons "for the public good, and the promotion and improvement of the medical profession and the services connected therewith."[57] A charter was granted on March 12, 1807 and a faculty was soon formed with, in part, N. Romayne as president,[58] S. L. Mitchill as vice president and professor of chemistry, D. Hosack

[55] J. Thacher, *op. cit.*, pp. 104-106.

[56] His thesis was entitled *De absorbentium systemate*, Edinburgh, 1799.

[57] J. C. Dalton, *History of the College of Physicians and Surgeons in the city of New York; medical department of Columbia College*, New York, 1888, p. 9. See also J. W. Francis, *An historical sketch of the origin, progress, and present state of the College of Physicians and Surgeons, of the University of New York*, New York, 1813.

[58] See *Report and address delivered by the president, to the Medical Society of the county of New York; together with the charter of the College of Physicians and Surgeons in the city of New York*, New York, 1807.

as professor of materia medica and botany, and lecturer on surgery and midwifery, and Benjamin DeWitt (1774-1819) as professor of the institutes of medicine and lecturer on chemistry. The new medical institution opened on November 10, 1807; before the second year (1808) a few changes were made in the faculty since now Mitchill was vice-president and professor of natural history and botany, and DeWitt was professor of chemistry. A course in mineralogy was also given with Archibald Bruce as professor.

Mitchill did not lecture on chemistry in 1807 since he was in Washington as a member of the senate; the course was given in his absence by DeWitt who was appointed to the full chair the following year. DeWitt was a medical graduate from the University of Pennsylvania (1797) and despite the lack of sources pertaining to his method of teaching chemistry his thesis *A chemico-medical essay to explain the operation of oxigene, on the base of vital air on the human body* (Philadelphia, 1797) documents his concern with the interrelationship of chemistry and medicine. James Woodhouse was professor of chemistry at the time DeWitt was at the University of Pennsylvania.

The College of Physicians and Surgeons reorganized in 1811 and Samuel Bard succeeded Romayne as president. A plan was formed for combining the College of Physicians and Surgeons with the medical faculty of Columbia College; the latter institution was by now doing little in the way of medical education, having graduated only 35 from 1793 to 1813. The merger was agreed to in 1814 by mutual consent and the medical faculty of Columbia College was discontinued, passing as a group into the faculty of the College of Physicians and Surgeons. After formal ratification by the Regents the faculty was reorganized; DeWitt was made vice-president, and professor of natural philosophy, and was followed in the chemistry chair by William J. Macneven (1763-1841) formerly professor of obstetrics. Mitchill was professor of natural history and botany in the new group, and Hosack professor of the theory and practice of physic.

Macneven, a native of Ireland,[59] attended schools in Prague and Vienna, and in 1785 obtained his medical degree in Vienna. The Viennese schools were a stronghold of Boerhaave's doctrines,[60] so that his chemistry must have been in the same tradition; N. J. Jacquin was professor of chemistry at the time. Macneven emigrated to New York in 1805 where he received an honorary M. D. from Columbia College; he was appointed professor of obstetrics in the College of Physicians and Surgeons in 1808 and later pro-

[59] D. Reilley, *Chymia*, *2*, 17-26 (1949).
[60] M. Neuburger, *Bull. Hist. Med.*, *12*, 486-528 (1942).

fessor of chemistry. As a chemist Macneven is best known for his early recognition of the importance of the atomic theory.[61] Macneven also wrote a work on chemical nomenclature to facilitate the acquirement of chemistry by his students; it is by far the best American publication on chemical nomenclature of the early nineteenth century, encompassing not only all of Lavoisier's material but adding the chemical advances of consequence.[62] The type of course Macneven presented to the medical students at the College of Physicians and Surgeons can be judged from his own text prepared for class use; it again displays Macneven's extensive knowledge of chemistry and his efforts to teach his class all the essentials.[63] In the lectures Macneven demonstrated the applicability of chemical principles to medicine although not as extensively as had S. L. Mitchill. Both Macneven and Mitchill were close friends and collaborated in one instance (1815) on the chemical examination of mineral water.[64] Macneven's chemistry lectures can in addition be evaluated from student note books[65] which are not unlike the printed version. As testimony to Macneven's chemical course the students presented the following commendation.[66]

> To our learned Professor, McNeven, we are under many obligations for his course of lectures on chemistry. His free communication of the most recent discoveries and improvements which are daily adding fresh luster to this science, evince at once, the industry with which he pursues this branch of human knowledge, and the interest he takes in discussing it.

Thomas Cooper testified to Macneven's teaching chemistry in its usefulness to medicine in the dedication to his *Discourse on the connexion between chemistry and medicine* (1818):[67] "I do not submit to your consideration the following discourse, because I suppose the connexion between chemistry and medicine is not duly appreciated and well taught in your University [College of Physicians and Surgeons]—for, while my

[61] *Exposition of the atomic theory of chymistry, and the doctrine of definite proportions, with an appendix of chymical exercises by the pupils at the laboratory*, New York, 1819.

[62] *A tabular view of the modern nomenclature, and system of chemistry, by William James Macneven* . . . , New York, 1821. See above, footnote 44 for details.

[63] *Outline of the lectures and demonstrations of Dr. MacNeven as professor of chemistry and materia medica in the College of Physicians and Surgeons, University of the State of New York*, New York, 1820. Macneven also edited with "added notes and annotations" William T. Brande's *A manual of chemistry* . . . , New York, 1821.

[64] See above, footnote 47.

[65] Described by C. A. Browne in *J. Chem. Ed., 18*, 153-158 (1941). These lecture notes by Thomas Arnold Brayton taken in 1823-1824 are now in the Edgar Fahs Smith Library, University of Pennsylvania.

[66] *The American medical and philosophical register, 3*, 513 (1813).

[67] See above, footnote 3.

excellent friend, Dr. M'Neven, fills the chair of chemistry, all that is necessary to be taught in theory, and illustrated by experiment, in this department of chemical science, will be fully given." Samuel Bard, who was president of the College of Physicians and Surgeons when Macneven was professor of chemistry, manifested a sincere interest in chemistry as a part of the medical curricula in his *Discourse on medical education* (1819) already quoted;[68] Bard in addition stressed in his address the need of a chemical laboratory in such instruction.[69]

In 1819, a series of complaints were lodged by the Medical Society against the College of Physicians and Surgeons, particularly the authoritativeness of the professors, fees, and laxity in examinations. It culminated in April 1826 with the resignation of a number of the faculty who joined together to establish the medical department of Rutgers College of New Brunswick, New Jersey (Rutgers Medical College). Hosack, Macneven and Mitchill were among those who withdrew from the College of Physicians and Surgeons.[70] Hosack became president of the new school which was opened in New York City and professor of physic and clinical medicine, Macneven professor of therapeutics and materia medica, and John Griscom (1774-1852) professor of chemistry.[71] Griscom was not a physician and had acquired a chemical background through his own efforts adding an extensive tour of Europe where he had considerable contact with the most eminent continental chemists.[72] He was professor of chemistry at Columbia College from 1814-1820 following J. S. Stringham to the chair; he did not lecture in this position since no salary was appropriated for the professorship. The lectures given by Griscom were lucid and well demonstrated by experiments and not only enjoyed by the audience but by the speaker as well; he was according to one authority

[68] See above, footnote 29.

[69] See above, footnote 29, pp. 16-17. Also consult H. S. VanKlooster, *Chymia*, *2*, 1-15 (1949).

[70] For details see D. A. Damarest, *A history of Rutgers College, 1766-1924*, pp. 293, and D. Hosack, *An inaugural discourse, delivered at the opening of Rutgers Medical College in the City of New York on Monday, the sixth of November, 1826*, New York, 1826.

[71] E. F. Smith, *John Griscom, 1774-1852, chemist*, Philadelphia, 1925. See also the work by his son John Griscom, M. D., *Memoir of John Griscom, LL. D., late professor of chemistry and natural philosophy; . . . compiled from an autobiography and other sources*, New York, 1859. The son was professor of chemistry at the College of Pharmacy of the City of New York (1835-1842).

[72] For details see Griscom's own *A year in Europe. Comprising a journal of observations in England, Scotland, Ireland, France, Switzerland, the north of Italy, and Holland. In 1818 and 1819*, Philadelphia, 1813, 2 vols., and F. B. Dains, *J. Chem. Ed.*, *8*, 1288-1310 (1931).

"the acknowledged head of teachers of chemistry." [73] A syllabus of his lectures for "a female class" gives proof of his wide knowledge and approach.[74]

The establishment of the Rutgers medical group in New York produced a rivalry with the College of Physicians and Surgeons who pressed for their suppression. A legislative action in 1827 made any medical diploma granted by an out of state university for work done in New York invalid in the state; this act, aimed specifically at Rutgers, led to the severance in 1827 of the connection between the Rutgers Medical Collge and its parent institution. A sponsorship by Geneva College in upstate New York was then sought and the faculty now was called the Rutgers Medical Faculty of Geneva College. This too was found illegal and in 1830, after only four short years, the ill-fated medical school closed.

The College of Physicians and Surgeons reorganized its faculty after the break away of the Rutgers assemblage in 1826; James F. Dana (1793-1827) was elected the new professor of chemistry to replace Macneven who had resigned.[75] Dana was a physician who had studied at Harvard College (1809-1814) under John Gorham (1783-1829),[76] and in London (1815) with Friedrich Accum (1769-1838) [77] finally acquiring an M. D. degree in 1817 (Harvard). He lectured on chemistry at Harvard and at Dartmouth College before accepting the chemical professorship in New York. Despite a primary interest in chemistry, Dana continued to follow medicine closely; Thacher [75] states that "as a lecturer on chemistry he had few superiors. His excellence consisted in a thorough and profound knowledge of every part of the science; great clearness of method and of illustration; a manner interesting and impressive; and extraordinary dexterity and success in his experiments." Dana's *An epitome of chymical philosophy* (Concord, 1825) is an erudite writing and connects chemistry with medicine although the emphasis is on chemical fundamentals. On the death of Dana, within a year after his appointment, John Torrey (1796-1873) became professor of chemistry.[78] Torrey was initially inspired with

[73] J. W. Francis quoted in *D. A. B.*, vol. 8, 1932, p. 7.

[74] *Syllabus of a select course of lectures on chemistry. Designed for a female class*, New York, 1818.

[75] J. Thacher, *op. cit.*, pp. 245-250.

[76] Gorham graduated from Harvard in 1801, and then went to Edinburgh where he took his M. D. See I. B. Cohen, *op. cit.*, pp. 80-93.

[77] C. A. Browne, *J. Chem. Ed.*, *2*, 829-851, 1008-1034, 1140-1149 (1925); *Chymia*, *1*, 1-9 (1948).

[78] *D. A. B.*, vol. 18, 596-598, 1936.

an interest in science by Amos Eaton (1776-1842);[79] he went on to more advanced studies at the College of Physicians and Surgeons, particularly under the stimulus of S. L. Mitchill who was then professor of natural history and botany, graduating as an M. D. in 1818. Macneven lectured on chemistry when Torrey was a student at the College of Physicians and Surgeons. Before becoming professor of chemistry in his alma mater he had held a like post at the United States Military Academy at West Point. In 1830, Torrey accepted the professorship of chemistry and natural history at the College of New Jersey (Princeton), which he held concurrently with the chair in New York. He was also professor of chemistry in the College of Pharmacy of the City of New York in 1829-1830. Torrey's chief interests, however, were in botany, and his fame rests on his achievements in this field of endeavor; his botanical work was furthered by the modification of his chair to cover both chemistry and botany. "Torrey will be remembered by the students of the College of Physicians and Surgeons as an excellent teacher. No man had a better understanding of their character. . . He quietly pursued his course, giving them the plain truth in a simple and comprehensive manner."[80] Torrey resigned in 1855 because of the pressure of his work in the United States Assay Office, of which he had been appointed superintendent in 1853, becoming emeritus professor of chemistry on his resignation. The lectures on chemistry in 1855-1856 were given by John LeConte (1818-1891)[81] who had received his medical degree from the College of Physicians and Surgeons in 1841, studying chemistry with Torrey. In 1846, he became professor of physics and chemistry in Franklin College, resigning in 1855 to teach at the College of Physicians and Surgeons. He left New York, however, in 1856 to become professor of physics at the South Carolina College (University of South Carolina)[82] and later (1868) was elected to the same chair in the University of California which he also headed as president (1868, 1875-1881). LeConte's contributions were principally in the realm of physics.

LeConte was followed in the chair of chemistry by Samuel St. John (1813-1876)[83] who was graduated from Yale (1834)[84] but had received

[79] E. M. McAllister, *Amos Eaton, scientist and educator*, Philadelphia, 1941. Eaton was encouraged to devote himself to natural science by S. L. Mitchill and D. Hosack.

[80] H. A. Kelly and W. L. Burrage, *Dictionary of American medical biography*, New York, 1928, p. 1220.

[81] *D. A. B.*, vol. 11, 1933, pp. 88-89.

[82] See J. LeConte, *Inaugural address delivered in the State House, December 1, 1857*, Columbia, S. C., 1858.

[83] H. A. Kelly and W. L. Burrage, *op. cit.*, pp. 1073-1074.

[84] Benjamin Silliman was professor of chemistry at Yale. See J. F. Fulton and E. H.

no special medical education although three honorary medical degrees attest to his stature in medicine. Before becoming professor of chemistry at the College of Physicians and Surgeons he had taught the same subject at Western Reserve College (Hudson, Ohio), Western Reserve Medical College at Cleveland, and at Kenyon College. When, in 1860, the College of Physicians and Surgeons combined with Columbia as its Medical Department, St. John continued as professor of chemistry in the new faculty. St. John was devoted to chemistry, which he presented in a clear and simple style, according to the established chemical schools of the period. Medical jurisprudence was added to the chemistry department in 1870. The chair was vacated by St. John's death in 1876. This survey of the professorship ends with St. John, since henceforth Columbia College medical department became what may be termed a modern institution and continental influences although present were far less than in prior eras. Columbia College was made Columbia University in 1896. Chemistry was by now an accepted and well integrated part of medical education, and its specialization was to lead in the future to instruction by doctors of philosophy in chemistry for the most part not doctors of medicine since the latter no longer could become sufficiently proficient in the field through medical school courses alone. By the end of the nineteenth century the teaching was further limited to physiological chemistry or what is now termed biochemistry.

It remains to trace briefly the occupants of the chemical chair at Columbia College in the interim 1814-1860 when no medical training was provided and the courses in chemistry were directed to students of the arts and sciences. When J. S. Stringham resigned in 1813 just prior to when the medical faculty combined with the College of Physicians and Surgeons, the professorship fell to John Griscom, who has already been discussed above in connection with Rutgers Medical College. On Griscom's resignation in 1820 James Renwick (1792-1863)[85] became professor of chemistry; from 1820 to 1857 the chemistry department included also natural and experimental philosophy, and was styled natural and experimental philosophy and chemistry. Renwick received an A. M. degree from Columbia (1810) and lectured on natural philosophy at this college in 1812. He assumed the chemistry chair only after acquiring an enviable reputation as an engineer, which was the predominant activity throughout his life. The chemistry courses he presented had distinction;[86] as an author in

Thomson, *Benjamin Silliman, 1779-1864, pathfinder in American science*, New York, 1947.

[85] *D. A. B.*, vol. 15, 1935, pp. 506-507.

[86] See Renwick's *Syllabus of lectures on chemistry*, New York, 1831.

chemistry he wrote *Outlines of natural philosophy*, New York, 1822-23 (2 vols.), *First principles of chemistry*, New York, 1840 and 1846, *First principles of natural philosophy*, New York, 1842, and edited Parke's *Rudiments of chemistry*, New York, 1824, and Daniell's *Chymical philosophy*, New York, 1840, 2 vols. Renwick became emeritus professor in 1853 on the insistence of the trustees in appreciation for his "long-tried, eminent, and faithful services in the cause of science and sound instruction."[86a] William H. Ellet, M. D. (1806-1859), taught elementary chemistry from 1830-1833 and was appointed lecturer in chemistry in 1830 on the suggestion of Thomas Cooper and, in 1832, professor of elementary chemistry.[87] Richard S. McCulloh, A. B. (1818-1894), accepted the professorship after Renwick's retirement in 1854; McCulloh transferred to the chair of mechanics and physics in 1877.[88] Charles A. Joy, Ph. D. (1823-1891), was the last appointee to the professorship before the annexation of the College of Physicians and Surgeons; he was also, 1865-1877, professor of general chemistry in the school of mines.[89]

In summation (see Appendix) it may be said that the Columbia College medical faculty first established in 1767 continued to function until 1814 when it was annexed by the College of Physicians and Surgeons of New York; the Revolution and problems of internal disorganization disrupted instruction, however, so that from 1787-1802 its teaching was somewhat ineffective. Despite these difficulties, there were eight occupants of the professorship of chemistry, all with medical degrees obtained from foreign institutions, especially Edinburgh. The influence of Boerhaave, Cullen, and Black was in consequence strong and is reflected in the manner that chemistry was presented in its relationship to medicine. The College of Physicians and Surgeons, organized in 1807, had seven professors of

[86a] See above, footnote 85.

[87] Ellet was graduated from Columbia College in 1824, when Renwick taught chemistry, and later received an M. D. No statement as to where he studied medicine can be located. Ellet was also professor of chemistry at the New York College of Pharmacy (1830-1832). When he left Columbia College he accepted the chair of chemistry, mineralogy and geology in South Carolina College (1835-1848).

[88] For full details on McCulloh see M. H. Thomas, *The Princeton University Library Chronicle*, *9*, 17-29 (1947).

[89] C. A. Joy first studied at Union College, then Harvard Law School (1847); he worked at one time with Charles T. Jackson, the Boston chemist, on a geological survey. Joy studied chemistry in Berlin, later Göttingen where he received a Ph. D. degree (1852), following with additional work at the Sorbonne. At Göttingen, Joy studied under the renowned Friedrich Wöhler (see H. S. Van Klooster, *21*, 158-170 [1944]). He held the chair of chemistry at Union College (1855-1857) before the professorship at Columbia. See Joy's *Chemistry; an inaugural address, delivered before the trustees of Columbia College, February 4, A. D., 1858*, New York, 1858.

chemistry prior to becoming the medical department of Columbia College (1860), all physicians, although one was such by virtue of three honorary degrees. In this case the medical degrees were preeminently American, and the chemistry courses were oriented to medicine but not to the degree of the early Columbia College faculty. The emergence of chemistry as an exacting and separate discipline, and the growth of other departments of medical practice elucidates in part this modification. Rutgers Medical College in its short history had only one professor of chemistry, a self-taught chemist. In the interim (1814-1860) when Columbia College was separated from a medical group, chemistry, as a part of the arts and sciences, was given by five incumbents all non-medical men but one. The emphasis then in New York City medical colleges (1776-1876), as represented by these three schools, was the teaching of chemistry by an M. D. with the correlation of chemistry and medicine an integral part of the program.[90]

To return to the letter from David Hosack to William Rawle, trustee of the University of Pennsylvania, on the qualifications of a professor of chemistry in the medical department,[91] it can now be readily understood that Hosack was indeed in a unique position for answering the questions. Not only had he been associated with Columbia College, the College of Physicians and Surgeons and Rutgers Medical College, but he had been initially trained in chemistry by Samuel Bard and Nicholas Romayne in addition to work in Edinburgh and Philadelphia where he was befriended by Benjamin Rush. Hosack was undoubtedly familiar with all the occupants of the chair of chemistry in the three colleges, and his association with Samuel L. Mitchill is noteworthy. The letter, which follows, is then an epitomization of the practices in selecting chemistry professors of the New York institutions of any consequence from their beginnings to the mid nineteenth century.

New York August 19th 1818

My dear Sir

I cheerfully reply to your several queries relative to the chemical professorships

[90] Compare this with the University of Pennsylvania school of medicine, which first was the College of Philadelphia (1765), then the University of Pennsylvania (1779) when the former combined with the latter in 1791. There were in these two institutions eight professors of chemistry (1765-1847), one of whom never lectured; of the remaining seven, all were doctors of medicine except one (Hare) and four had been at Edinburgh with the rest attending American colleges. See above, footnote 1 for details. Contrast this with the part of doctors of medicine in American pharmaceutical education and their training as discussed by G. Urdang, *American Journal of Pharmaceutical Education*, *14*, 546-555 (1950). The scientific background of chemistry teachers in representative pharmacy schools of the United States during the nineteenth century is treated by G. Sonnedecker in *Chymia*, *4*, 171-200 (1953).

[91] See above, footnote 10.

in our universities and I beg you to make such use of my communication as you may deem proper or calculated to promote the objects you have in view.

With us, as with you, chemistry is essentially connected with our medical school and has been so from the first establishment of it in 1762.[93]

To the physician chemistry is indispensably necessary and in this as in every other university is made the subject of examination with the candidates for medical degrees.

As unfolding the composition of medecines,[93] in explaining the ultimate texture of the human frame and the phenomena which its various functions exhibit chemistry is considered of primary importance.

But it is not essentially necessary that it should be *taught* by a physician—a Priestley—a Vauqulen (sic) or a Davy would certainly teach the general principles of that science with equal if not more ability than any physician of their time—but its application to medecine doubtless would in some respects be more minutely illustrated by the physician than the chemist who had not given attention to the connexions which his science holds with that of medecine.

Should an illustrious character like either of the above, offer among the candidates for a place in either of your universities doubtless he would be preferred to any physician of his day to fill such place. The university of Pennsylvania would accordingly have denied great accession of character had Dr. Priestley accepted the professorship so wisely tendered him by your Board of Trustees.[94]

But, caeteris paribus, the physician distinguished by his knowledge of chemistry should be preferred to the abstract chemist. I mean by the physician one who has received a *regular education as such*, not that it is necessary that he should have practised his profession.

As to examinations the chemical professor with us[95] takes a part but usually the subjects upon which he examines the candidate are those chiefly chemical or connected with medecine, they are such as equally fall under the notice of the chemist as of the physician—vis *Respiration*—the *composition* of different parts of the body—the *chemical preparation of* medecines, all which are generally well understood and attended to by all professors or teachers of chemistry.

The professor of the materia medica as such, is not sufficiently qualified to teach chemistry nor can he give sufficient time to chemistry without neglecting the materia medica—the *former* is too extensive to be taught as a branch of the *latter*. Chemistry has therefore, with great propriety, been made in most universities the subject of a distinct professorship and is considered an essential qualification in the candidate for medical honours. The professor has his vote in common *with* his colleagues.

One of our former professors of chemistry never practised medecine except as

---

[92] Hosack is in error here; the year was actually 1767.

[93] Hosack spells medicine as medecine throughout the letter and it is therefore retained. Medical, however, is spelled correctly.

[94] The professorship of chemistry at the University of Pennsylvania medical school was offered to Joseph Priestley in 1794, but he refused to accept it because he wanted to remain in Northumberland, Pennsylvania. See E. F. Smith, *Priestley in America, 1794-1804*, Philadelphia, 1920.

[95] William J. Macneven was professor of chemistry at the time.

a prescriber—at our Hospital [96]—the present incumbent has not been much engaged in practice yet they have performed their professonill (sic) dutuies (sic) with great credit to themselves and the university—Dr. Black to whose labours more than perhaps any other professor, Edin[r] owes the celebrity of her medical school, did not practice medecine except that he occasionally prescribed for a pupil or a friend. Neither Scheele—Bergman—Chaptal—Lavoisier nor Fourcroy practised medecine yet they were among the most distinguished teachers of chemistry:—hence therefore the practice of medecine is not an essential qualification in the Prof[r] of Chemistry—it is too the less neccessary as our universities have so many professors whose duty it is to teach medecine in all its departments and in all its connexions with the several sciences with which it is associated—yet as I have before remarked if two candidates offer with equal qualificat[s] as to their abilities, their attainments and their talents for communicating instruction, the physician is in my opinion the preferable character and will contribute most to the celebrity of the school with which he is connected—but where there is a manifest inequality and a candidate offers decidedly more distinguished for his general erredition (sic) and minute acquaintence with chemistry, his want of medical education will comparitively be of little importance.

With the hope that these remarks may aid you in your estimate of the character before you as the candidates for the chemical chair—I am Dear Sir with sentiments

of the highest respect & esteem

Yours

David Hosack

William Rawle Esq.

What cognizance the trustees of the University of Pennsylvania took of Hosack's letter is not known, although they should have heeded his counsel, since no controversy over the utility of chemistry to medicine and the choice of a professor of chemistry ever occurred among the New York medical schools here considered.

APPENDIX

Tabular Summation of the Professorship of Chemistry

I. Columbia College Medical Department (1776-1876)

	Period chair held	*Degree*	*Institution*	*Studied chemistry under*
1. James Smith (d. 1812)	1767-1770		Edinburgh	William Cullen
		M.D.	Leiden	H. D. Gaubius
2. Peter Middleton (d. 1781)	1770-1776	M.D.	St. Andrews	
Vacant—Revolutionary War	1776-1784			
3. Samuel Bard (1742-1821)	1784-1785	M.D.	Edinburgh	William Cullen
4. Henry M. Moyes (1750-1807)	1785-1786	M.D.	Edinburgh	Joseph Black

[96] Probably Benjamin DeWitt who held the chair from 1808-1814.

		Period chair held	*Degree*	*Institution*	*Studied chemistry under*
5.	Samuel Bard	1786-1787		(See I., 3)	
	Vacant	1787-1791			
6.	Nicholas Romayne (1756-1817)	1791-1792	M.D.	Edinburgh	Joseph Black
7.	Samuel Nicoll (d. 1796)	1792-1794		Columbia	P. Middleton
			M.D.	Edinburgh	Joseph Black

Chair vacant from 1794-1802, chemistry taught by Samuel L. Mitchill as professor of natural history, chemistry, agriculture, and other arts depending thereon.

8.	Samuel L. Mitchill (1764-1831)	1792-1802	M.D.	Edinburgh	Joseph Black
9.	James S. Stringham (1775-1817)	1802-1813		Columbia	S. L. Mitchill
			M.D.	Edinburgh	Joseph Black?

From 1813-1860 chair of chemistry was not in the medical faculty which ceased to exist with absorption by College of Physicians and Surgeons.

10.	John Griscom (1774-1852)	1814-1820		self taught	

From 1820-1857 this Department included also natural and experimental philosophy and was styled "Natural and Experimental Philosophy and Chemistry."

11.	James Renwick (1792-1863)	1820-1853	A.M.	Columbia	J. S. Stringham
12.	William H. Ellet (1806-1859)	1832-1833		Columbia	James Renwick
			M.D.	?	?
13.	Richard S. McCulloh (1818-1894)	1854-1877	A.B.	College of New Jersey	
14.	Charles A. Joy (1823-1891)	1857-1877	Ph.D.	Göttingen	Friedrich Wöhler

The following came after the combination of the College of Physicians and Surgeons to become the Medical Department of Columbia College.

15.	John Torrey (1796-1873)	1860-1873	M.D.	C. of P. & S.	James Macneven
16.	Samuel St. John (1813-1876)	1860-1876	M.D.*	Yale	Benjamin Silliman

II. College of Physicians and Surgeons of New York (1807-1860)

1.	Samuel L. Mitchill	1807-1808	M.D.	(See I., 8)	
2.	Benjamin DeWitt (1774-1819)	1808-1814	M.D.	U. of Penna.	James Woodhouse

In 1814 the College of Physicians and Surgeons merged with the medical faculty of Columbia College.

3.	William J. Macneven (1763-1841)	1814-1826	M.D.	Vienna	N. J. Jacquin

A group of the faculty withdrew in 1826 to form Rutgers Medical College.

4.	James F. Dana (1793-1827)	1826-1827		London	Friedrich Accum
			M.D.	Harvard	John Gorham
5.	John Torrey	1827-1855	M.D.	(See I., 15)	
6.	John LeConte (1818-1891)	1855-1856	M.D.	C. of P. & S.	John Torrey
7.	Samuel St. John	1856-1860	M.D.*	(See I., 16)	

In 1860 the College of Physicians and Surgeons became the Medical Department of Columbia College.

III. Rutgers Medical College (1826-1830)

1.	John Griscom	1826-1830		(See I., 10)

After 1827 was called Rutgers Medical Faculty of Geneva College.

---

* Honorary degree.

AUTO-OBSERVATION OF APHASIA

Reported by an Eminent Nineteenth Century Medical Scientist

WALTHER RIESE

On the following pages a translation of an incidence of "alalia" as reported by the patient himself, and a medical and historical interpretation of the case, are being offered. The patient was Jacques Lordat (1773-1870), an eminent member of the medical school of Montpellier (see Biographical Note at the end of this article).

The Lordat Case[1]

(A scientist's auto-observation of "Alalia")

. . . I noticed that when I wanted to speak I could not find the right expressions: this symptom, which came as a surprise, made me wonder. I tried to make myself believe that this impediment had been no more than a temporary distraction and that, with better concentration, my power of speech would be as good as before. In the midst of these reflections I was informed that a person who had come to the house to enquire about my health had refrained from paying me a visit for fear of disturbing me. I tried to utter a few words to acknowledge this courtesy. My thoughts were ready, but the sounds that should convey them to my informant were no longer at my disposal. Turning away in dismay, I said to myself: *So it's true that I can no longer speak!*

My impediment increased rapidly: within twenty-four hours all but a few words eluded my grasp. Those that did remain proved to be nearly useless, for I could no longer recall the way in which they had to be coordinated for the communication of ideas.

I was therefore suffering from an incomplete Alalia.

I was no longer able to grasp the ideas of others, for the very amnesia that prevented me from speaking made me incapable of understanding the sounds I heard quickly enough to grasp their meaning. The effort of remembering each sound would have taken too much time, and conversation is far too cursive to permit the understanding of a sufficient number of words . . .

. . . Inwardly, I felt the same as ever. This mental isolation which I mention,

[1] From: *Analyse de la parole pour servir à la théorie de divers cas d'Alalie et de Paralalie (de Mutisme et d'Imperfection du parler) que les nosologistes ont mal connus.* Leçons tirées du Cours de Physiologie de l'année scolaire 1812-1813, par le professeur Lordat. Montpellier, Louis Castel, Libraire-Editeur, Grand'-Rue 32; Paris, J. B. Baillière, Germer-Baillière, Fortin Masson et Cie., 1843.

my sadness, my impediment and the appearance of stupidity which it gave rise to, led many to believe that my intellectual faculties were weakened . . .

It was a long while before I became fully aware of my condition. When I was alone and wide awake, I used to discuss within myself my life work and the studies I loved. Thinking caused me no difficulty whatever.

Accustomed as I was to pedagogical duties, I felt fortunate in this ability to arrange in my mind the principal propositions of a lecture, without encountering any difficulty in making whatever added changes I deemed propitious in the sequence of my ideas. My memory for facts, principles, dogmas, abstract ideas, was the same as when I enjoyed good health. Therefore I could not believe myself ill; the impediments under which I suffered seemed to be no more than dreams.

For a long period I had been content to fix the boundaries of thought, to develop it, to set rules for the subordination of ideas: expressions would fall into place without effort.

I did not make any progress in my reflections on my morbid state, each day telling myself that no symptom whatever remained; but as soon as anyone came to see me, I again became aware of my illness by my complete inability to say: "Good day, how are you?"

I had to realize that the inner workings of the mind could dispense with words; that the embodiment of ideas was entirely different from the process of forming and combining them. Thus, while recognizing the instrumentality of language in conserving ideas, in preserving them for future reference, and in transmitting them, I was unable to accept completely Condillac's theory that verbal signs are necessary, even indispensable, for thought. Yes, I apprehended that of that total *logos* which I previously discussed with you, I was in full possession only of the inner aspect, having lost its external manifestations . . .

. . . If you have not given much thought to the extent of this amnesia, you might expect that I could have solaced myself by reading, but of this there was no possibility at first. In losing my memory of the meaning of articulating words, I also lost that of their visible signs. Syntax had disappeared along with words; the alphabet alone remained, but the junction of letters to form words was a study I would have to undertake.

When I wanted to glance at the book I had been reading when my disease declared itself, I found it impossible to read its title. I will not allude to my despair—you yourself can best imagine it. I was forced to spell out nearly every word, and I must confess, incidentally, this gave me the chance to realize the complete absurdity of French orthography. Then after several weeks of deep melancholy and resignation, it dawned on me that in looking from far away at an in-folio in my library I could read exactly the title *Hippocratis opera*. This discovery made tears of joy come to my eyes. I made use of this faculty to re-educate myself in speaking and in writing.

This re-education was a slow process, but every fortnight I was aware of appreciable progress . . .

Thus it becomes evident that nervous Ataxia, produced by several debilitating factors, had temporarily manifested its disorders in various areas and, locating

itself in the brain, had arrested the function of retaining verbal sounds and their oral use, without in the least involving any of the other intellectual functions.

To this disease I have given the name of verbal amnesia . . .

My illness did not consist only in forgetting words and in not recalling the meaning of those I could still remember, but also in an instinctive suggestion of the words I knew but which I used incorrectly. It was not only a condition of amnesia, but a condition I should like to term *paramnesia*. that is, a faulty use of known and remembered sounds. Thus, when I wanted to ask for a *book*, I pronounced the words for *handkerchief*. However, immediately after having uttered this word, I retracted it, feeling that another was indicated. In other instances of disease of this type, I can mention patients who found themselves in a worse plight and who did not even realize that the word they used was not the correct one.

Another manifestation of my paramnesia consisted in an inversion of the letters of syllables in the polysyllabic words that I had just rediscovered; for instance, instead of *raisin*, I asked for *sairin*; for *musulman* I tended to say *sumulman*.

(Translated by Judd Hubert, Ph. D.,
Harvard University)

Interpretation

Since the age of 10 years Lordat suffered from repeated tonsillar abscesses. On the fifteenth day of an attack which appeared on July 17, 1825, after long intellectual work and inner unrest, speech defects occurred, in modern terms, a transient mixed aphasia. In fact, he suddenly became unable to express his thought by the symbols of spoken language (motor aphasia). In his retrospective analysis, he used the term amnesia which was intended to express not only the lack of "coordination"[2] of movements needed for speech, but also the simultaneous defect of understanding (sensory aphasia). He immediately realized the integrity of thought and ideas which he was perfectly able to arrange and even to modify, in accordance with teaching purposes: "My memory for facts, principles, dogmas, abstract ideas, was the same as when I enjoyed good health." At the initial stage, there was also alexia. Moreover, the grammatical structure was lost (syntactical defect). After several weeks, his reading and writing abilities were regained; he then reeducated his speech; but he did not describe the methods used in this reeducation. He called the whole condition "verbal amnesia," though the faulty use of words (verbal paraphasia) and letters (literal paraphasia) seemed to justify the term "paramnesia." That, generally speaking, he thought in

[2] In this respect it is significant that he shifted the syndrome to the class "nervous ataxia."

terms of loss of memory (evocation) was, I submit, due to his insight into the *transient* nature of the whole condition.

Historical Significance

Lordat's auto-observation ranks high among all contributions to the early history of aphasia.[3] Not only does it convey a description of the major defects seen and described much later in aphasics; it owes its specific and unique importance to the fact that it was made at this very initial stage of our knowledge of speech defects resulting from brain lesions, by a person of highest intellectual standing, endowed with a keen sense of self-analysis. But the problem involved, and a problem of greatest scope even to-day, is that of *interrelation of thought and language*.

The problem has been answered by two schools of thought. Humboldt[4] may be cited as a most eminent representative of one of them. Language, he taught, is the organ of *thought*. Intellectual activity passing without leaving any traces, as it were, through *speech* becomes perceptible to the senses. He asserted that intellect and speech are one and inseparable. The former is bound to be related to sound, otherwise thought attains no clarity and images do not ripen to concepts. The inseparable link of *vocal instruments*, *thought*, and *hearing* with speech has its irrevocable and unexplainable origin in human nature, he concluded.

Contemporary students of *aphasia* reached the conclusion that thought and language are neither identical nor parallel, though closely related to one another. According to Pick,[5] verbalization is, as a rule, preceded

[3] Lordat's influence in the history of aphasia was significant, though only indirect. His interpretation of loss of spoken language without paralysis of the tongue was adopted by the older Dax, who, too, believed in a disorder of the *synergy* of the muscles, needed for pronunciation. Most patients, he said, talk though they use wrong words. One of his own patients was able to move his tongue though he was completely mute. Dax was able to refer to similar observations made by Schenkius in the 16th century. Dax was the first to stress the importance of the left-sidedness of brain lesions in aphasics, though he did not bring it into relation to right-handedness. Nor was his son, who edited and completed the observations of his father, able to answer the question why just the left half of the brain was the site of lesions in patients losing their memories of words. But he ascertained, as Lordat did, their perfect "intelligence." (*L'aphasie* by G. Dax. Montpellier, C. Coulet, Paris, V.-A. Delahave, 1878.) See also: W. Riese, The early history of aphasia. *Bull. Hist. Med.*, 21: 322-334, 1947.

[4] W. v. Humboldt: *Ueber die Verschiedenheit des menschlichen Sprachbaues und ihren Einfluss auf die geistige Entwicklung des Menschengeschlechts.* Berlin, 1836, 511 pp.

[5] Aphasie. In: *Handbuch der normalen und pathologischen Physiologie.* Herausgegeben

by a scheme or design of pure thought. But these two stages, leading from thought to speech, are not always sharply demarcated; at times verbalization taking place, while thought is still being organized. Therefore, the more verbalized thought, the greater the effect of aphasia on thought. "Inner speech," one of the most involved concepts, still lacking a unanimous definition, plays an important role in the formulation of thought, particularly, abstract thought. Goldstein called inner speech "the totality of processes and experiences which occur when we are going to express our thoughts etc. in external speech, and when we perceive heard sounds as language." [6] Pick believed that aphasia may have but little effect on mental behavior and thought in those instances in which only lower levels of receptive and expressive language are involved; it is different, however, as soon as inner speech is affected. But verbalization affects clearness, differentiation, and logical sequence of thought in different individuals in different ways.

Lordat's auto-observation was made a century before insight into the interrelation of thought and language was obtained from the study of aphasia. While his observation displays mastery of *description*, it still lacks the essential prerequisites to an *analysis* of the finer processes involved in disordered speech. More specifically, the extent to which Lordat's thought was verbalized normally, remains undisclosed. Nor are we informed about changes in the inner structure of his thought, once aphasia became manifest. This much, however, can be said, that he would hardly have been able to plan lectures and to organize the material needed, had his inner speech and his thought been affected to any major degree. At any rate, the problem was raised and discussed by Lordat for the first time in the history of aphasia.[7]

von A. Bethe, G. v. Bergmann, G. Embden, and A. Ellinger. 15. Band; Zweite Haelfte. Berlin, J. Springer, 1931.

[6] *Language and Language Disturbances.* New York, Grune & Stratton, 1948.

[7] One may cite as a counterpart the case of an outstanding figure in literature, Jonathan Swift, who died in the 78th year of his life, whose intelligence was severely disturbed in the last years of his life, and who also suffered from aphasia. This diagnosis was made for the first time by Craik in 1882, who judiciously drew attention to "the automatic utterance of words ungoverned by intention." In fact, Swift, though silent (mute) for a whole year, but evidently understanding everything that was said to him, was reported to have replied to his housekeeper who told him on his birthday that bonfires and illuminations were being prepared to celebrate it as usual: "it is folly, they had better let it alone." On another occasion, he repeated several times: "I am what I am"; on still another occasion: "I am a fool." Once afterwards, as his servant was taking away his watch, he said: "Bring it here" and, when the same servant was breaking a large hard coal, he said: "That is a stone, you blockhead." Through Hughlings

BIOGRAPHICAL NOTE*

Lordat was born in Tournay, near Tarbes, the 21st of February 1773. He began to study medicine in 1793, in Montpellier, and graduated from that school in 1797. It was then that his friendship with Barthez began, who at the time of death bequeathed to Lordat his manuscripts. Lordat's teaching career which lasted for about 60 years, began at that time. He taught anatomy, physiology, and various subjects of medicine and surgery. In 1813, he succeeded Dumat as professor of physiology. He was a brilliant teacher and remained up to the 87th year of his life the most recognized representative of the famous Montpellier school of medical thought. He died in his 98th year.

List of Lordat's major writings:

1. Observations sur quelques points de l'anatomie du singe vert, 1804,
2. Traité des hémorrhagies, 1808,
3. Conseils sur la manière d'étudier la physiologie de l'homme, 1813,
4. Nouvelles remarques sur les hernies abdominales, 1811,
5. Exposition de la doctrine médicale de Barthez, 1818,
6. Du dialogisme oral dans l'enseignement public de la médecine, 1828,
7. Leçons extraites du cours de physiologie, rédigées par M. Kuehnholtz, 1830.
8. Deux leçons de physiologie rédigées par le même, 1832,
9. Essai sur l'iconologie médicale, ou sur les rapports d'utilité qui existent entre l'art du dessin et l'étude de la médecine, 1833,
10. Deux leçons de physiologie faites en 1832, 1833,
11. Douze leçons de physiologie sur les fonctions privées du système musculaire chez l'homme, 1835,
12. De la perpétuité de la médecine ou de l'identité des principes fondamentaux de cette science, depuis son établissement jusqu'à présent, 1837,
13. Ière leçon du cours de physiologie faite en 1840-1841,
14. Deux leçons du cours de 1841 et 1842 sur les lois de l'hérédité physiologique comparée chez les bêtes et chez l'homme, 1842,
15. Sur la philosophie médicale de Montpellier, 1842,
16. Ebauche du plan d'un traité complet de physiologie humaine, 1841,
17. De l'insénescence de l'esprit de l'homme,
18. Sur la nécessité d'étudier les cas rares, 1842,
19. Rappel des principes doctrinaux de la constitution de l'homme, énoncés par Hippocrate, démontré par Barthez et développés par son école, 1857.

Jackson's masterly analysis of the "speechless man" we have become acquainted with the "recurrent utterances" of the aphasic and the preservation of his inferior or emotional speech. Both these criteria of aphasic behavior were very obvious in the Swift case: they were well described by those surrounding him almost 150 years before they were made the clue for a better understanding of aphasia by the eminent British clinician. (*See*: John Hawkesworth, *The Works of Dr. Jonathan Swift*, London, 1766; Leslie Stephen, *English Men of Letters*, New York, Macmillan & Co., pp. 186-209, 1882; and: Henry Craik, *The Life of Jonathan Swift*, London, John Murray, 1882, p. 561.)

* Adapted from the obituary published by the *Gazette des Hôpitaux*, *43*: 203-204, 1870.

SIR JOHN ELDON GORST AND THE CHILDREN OF THE NATION

BENTLEY B. GILBERT

In the *Contemporary Review* for January, 1902, there appeared an article written by General John Frederick Maurice using the pseudonym "Miles" which discussed the causes of the current lack of soldiers for the Boer War.[1] According to the General, the difficulty lay not in the system of voluntary recruiting, the low pay, or in lack of patriotism, but in the fact that only two men out of five offering themselves for service were fit to become effective soldiers.[2] It was, he felt, a sad commentary on health conditions among the British race.

The reaction to this article, both public and parliamentary, was the beginning of a series of events which led directly to the national health insurance act of 1911, and which may be said to have culminated in the present national health service. The man who promoted this reaction, who brought its first tangible result, the "Report of the Interdepartmental Committee on Physical Deterioration,"[3] to the notice of an unwilling government, who saved it from the limbo often reserved for the reports of official investigators, and who did a great deal of unrecognized work for the welfare of British children, was Sir John Eldon Gorst.

Gorst was born in Wiltshire in 1835. He was educated at Cambridge for the bar but broke off his studies to spend several years in New Zealand. After his return he was called to the bar and entered politics. He undertook the reorganization of the Conservative Party after the electoral reform of 1867, a task which was completed so successfully that he has been given much of the credit for the party's crushing victory at the polls in 1874. He received no office from the second Disraeli government which came into power after the election, a fact which caused him some bitterness. Nevertheless, when the Liberals returned in 1880, Gorst associated himself with Lord Randolph Churchill, Arthur Balfour, and

[1] *Contemporary Review*, 81 (Jan., 1902): 78-86.

[2] General Sir John Frederick Maurice (1841-1912) was the son of Frederick Denison Maurice, the christian socialist. He was educated at home, served in the several African wars of the seventies and eighties, and at the time of the article was commandant at Woolwich. He was retired a major general.

[3] *British Parliamentary Papers*, 1904, vol. XXXII, Cd. 2175, 2110, 2186.

Sir Henry Drummond Wolff in the famous clique known as the "Fourth Party," which stimulated, and sometimes led, the Conservative opposition to the second Gladstone government.

In 1885 Lord Salisbury gave Gorst the solicitor generalship, which carried with it a knighthood. In Salisbury's second government Sir John was parliamentary undersecretary of state for India, and in the third, in 1895, he became vice-president of the privy council committee for education. He held this office, renamed the Board of Education in 1899, until the middle of 1902, when he was unceremoniously forced to resign.

The resignation was the result of antagonism between Gorst and his party which had been growing since the eighteen-nineties. Early in that decade he had seemed about to achieve a place in the first rank of British politics.[4] But soon his importance began to decline. His cynicism about the goodness of men in general and politicians in particular, his small regard for such Tory ikons as the land and the church, his lack of enthusiasm for the Boer war when it began, and, most important, his continual advocacy of social reform—these all served to isolate Gorst from his party.

His interest in social reform seems to have begun in 1890 when he was a British delegate to the international labour conference at Berlin and is reflected in his appointment to the education department in 1895. As his agitation for public welfare legislation grew more intense, his popularity among important Conservatives diminished. By 1902 it was apparent that the important education bill which the government was planning needed a sponsor of more political potency than Gorst at that time possessed. Therefore, after an intrigue of the most unseemly kind, management of the bill was taken from Gorst by Arthur Balfour who soon after became Prime Minister. Gorst resigned almost immediately and in the next year left the party over the question of tariff reform.[5] Thus neither the stricture of party discipline nor the loyalty due to old friends bound him when the storm raised by General Maurice's article

[4] In March, 1891, the *Review of Reviews* called him the "ablest member of the administration outside the Cabinet" (vol. 3, p. 221). Again in November of the same year, he was "the most considerable member of the Conservative Party" after Lord Salisbury and his nephew (vol. 4, p. 575). Even the archconservative *Spectator* thought very highly of him. *Spectator*, 80 (April 24, 1895): 568.

[5] One of his principal objections to the reintroduction of tariffs was the effect the increased cost of food would have upon health. *North American Review*, 177 (Aug., 1903): 161-171.

and those of other writers, which soon followed, began to whistle around Whitehall. The gale caused even the inscrutable war office to blush. Early in 1903 it laid before Parliament a paper which proved Maurice's charges substantially true.[6] Within six months the interdepartmental committee on physical deterioration was appointed. The important work of Gorst was the publicizing of the report of this committee so that its implementation by statute was politically profitable for the Liberals after they came into office.[7]

As a champion of reform, Gorst maintained that he was only following the path marked for the Conservatives by Disraeli. His ideas on the subject are most fully stated in the preface he wrote for the Countess of Warwick's pamphlet, *A Nation's Youth*, and in his own book, *The Children of the Nation*, of which more will be said later.[8] To him, the Conservatives had always been the most honest, and usually the most effective, friends of the working class. He cited the Parliament of 1874 as being distinguished above all others for social legislation. But with the passing of Disraeli, the Conservatives lost their zeal for social reform and became the party of aristocracy and privilege. Gorst saw the transition as being well represented by two recent Conservative prime ministers. Disraeli looked on the working people as equals to whom justice was to be done; Salisbury believed them inferiors, albeit to be treated with generosity and compassion. Through the early eighties, he said, the "Fourth Party" had attempted to keep aloft the banner of progress and Tory democracy, but Lord Randolph Churchill had been seduced by office, and Arthur Balfour, never very enthusiastic at any time, had finally remembered his duty to his class. Only he, Gorst, was left to keep the old tradition alive.

Nor was he comforted when he surveyed the Liberals. They were constitutional tinkerers, thought Gorst, not reformers, and he did not expect them to change. The natural result was the rise of a Labour Party and to it he dedicated his book in 1907.

These may have been the unhappy reflections of an embittered old man, but Gorst had been at the center of affairs throughout the period, had

[6] *P. P.*, 1903, vol. XXXVIII, Cd. 1501.

[7] The government White Paper of 1944 containing proposals for a national health service states flatly that the "origins of the school medical service may be traced directly to the Report of the Interdepartmental Committee on Physical Deterioration. . . ." *P. P.*, 1943-1944, vol. VIII, Cd. 6502, p. 63.

[8] Frances, Countess of Warwick, *A Nation's Youth* (London, 1906); Sir John Eldon Gorst, *The Children of the Nation* (New York, 1907).

known all the prime ministers well and Disraeli intimately. Also it should be remembered that his estimate of the future of the Liberals was written just after that party's astounding electoral victory in 1906.

The report of the physical deterioration committee diverted Gorst from reform in general to the cause of better care for children. He had not been unmindful of this phase of social welfare before, for since the Berlin labor conference he had been interested in the situation of working mothers and schoolchildren.[9] Now his attention was focused on a specific problem.

The interdepartmental investigation was made by officials of the Board of Education, the Home Ministry, and the Local Government Board. Sir William Anson, Gorst's successor at the education department, held the same post in 1905, and his presence injected personal animosity into a matter on which Gorst already had the strongest feelings.[10] Furthermore there were groups in the Home Office and the Local Government Board which wished to see the report shelved. Originally the terms of reference of the committee had ordered that it merely recommend whether the matter of physical deterioration was worth an investigation by a royal commission. But the education department had so enlarged the terms as to preclude the possibility of a later royal commission, which the other two departments had hoped to name and control.[11] As it was, the interdepartmental committee made a very full investigation, presenting to Parliament what was essentially a royal commission report, and a most damaging document it was.

An important exhibit was the Johanna Street School in Lambeth, less than a ten-minute walk from the Houses of Parliament. Here, on the testimony of witnesses, 90 per cent of the students were suffering from some disability which interfered with studies, usually malnutrition and anemia; 15 per cent had eczema.[12]

[9] This is another excellent example of the influence of Germany on English social reformers. This fact was patent at the time of the national health insurance bill.

[10] Sir William Reynell Anson, third baronet (1843-1914), was born in Sussex, educated at Eton and Oxford, taught law and was appointed in 1881 warden of All Souls College, Oxford. He became a Conservative member of Parliament in 1899; he had been a Liberal. He went to the Board of Education in 1902 and became its president after the passage of the education act of that year. He is best known for his writings on the English constitution and on the law of contract.

[11] Sir Almeric W. Fitzroy, *Memoirs* (London, 1926), 259. Fitzroy was chairman of the interdepartmental committee. Although a sincere health reformer, he had no love for Gorst. His sparkling memoirs are an excellent source for this period but should be used with care, for he was a man of strong prejudices.

[12] Cd. 2210, *op. cit.*, para. 440.

An official of a friendly society gave an almost unbelievable report on the amount of medical information possessed by the working classes in Chippenham, Wiltshire. She stated that among these groups it was not unusual when a woman died in childbirth to allow the baby to die also and bury it with her. They "simply did not know what to do with it." [13]

Withal there was no proof that the British race was deteriorating, mainly because there were no adequate anthropometric surveys covering earlier generations. But there was a great deal of evidence of lack of proper foods and of adequate prevention of disease. For example, fresh milk was almost unobtainable in the poorer sections of London not only because the people had not the money to buy it, but because they would not when they had.

The report stressed that more attention should be paid to the health of children.[14] This seemed a logical place to begin. An agency already existed in the school system, and it was generally agreed that much of the poor health among adults had its origin in childhood.

Gorst, sitting now as an independent, took up the report as soon as Parliament assembled in 1905. During the debate on the address in reply to the speech from the Throne, he inquired what the government intended to do about the committee's recommendations. Society, he said, separates the parents from the child, but does not adequately care for the child. It was not a matter of interfering with the liberty of the parent, he felt, but simply that the state which forces the child to attend school had an obligation to see that he was in a condition to learn.[15]

A few days later he outlined his intentions. He would, he said, "bring the subject to the attention of the House at every opportunity. He would bring it upon the Irish Estimates, the Scottish Estimates, and the English Estimates, and he would entreat the Government for the sake of the nation and Empire . . . not to neglect the recommendations of the Committee." [16] The government was entirely uninterested. It would not promise a debate on the report.[17]

The fact was that the Balfour government was in no position to do anything. No one was more aware than the Prime Minister that the

[13] *Ibid.*, para. 4913.
[14] Cd. 2175, *op. cit.*, p. 57.
[15] *House of Commons Debates*, series 4, CXLI, 141 (Feb. 14, 1905).
[16] *House of Commons Debates*, series 4, CXLI, 1145 (Feb. 23, 1905).
[17] *Ibid.*, CXLI, 1316-1318 (Feb. 27, 1905).

mandate of the "Khaki Election" of 1901, if it ever was a mandate, had long ago expired. The Conservative Party was badly split over tariff reform, and the Prime Minister himself was under attack from both sides of the House of Commons on a number of issues. However, pressing urgencies in foreign affairs, of which the public knew nothing, required that he retain power for a few months more. So the Conservatives marked time, and Balfour held the cabinet together, reaching out to the right or the left to lop off a ministerial head when breaches of discipline became too flagrant.

Gorst and his followers decided that the best strategy would be to concentrate their efforts on a few specific recommendations. They chose the feeding and medical inspection of school children as having the best chance of immediate passage. The ministers, on the other hand, simply refused to take responsibility for any reforms during the session. In the debate on the Irish estimates, Walter Long, who had recently moved from the Local Government Board to the secretaryship for Ireland, defended his actions while at the former department. He said that nothing could be done without careful study and legislation. As far as schools went, his department had nothing to do with them, and he did not feel that he needed to entertain any complaints about the physical condition of students.[18] In the same debate William Anson retorted to a question by saying that it was the duty of the Poor Law Guardians, not of the Board of Education, to feed the poor. Nevertheless he professed every sympathy for the pathetic condition of children.[19] The controversy over the report had stirred him, a few days earlier, to visit the Johanna Street School. He reported that all the students seemed to be "attending properly to their duties." He suggested that perhaps the work required of some of them was too difficult, but he refused to confirm that anything was amiss.[20]

Early in April, 1905, Gorst, the Countess of Warwick, Dr. T. J. Macnamara, who had ably seconded Gorst in Commons, and Dr. Robert Hutchinson descended on the notorious Johanna Street School.[21] There

[18] *House of Commons Debates*, CXLIII, 873-874 (March 22, 1905). The administration of the Poor Law was one of the duties of the Local Government Board.

[19] *Ibid.*, CXLIII, 874-876 (March 22, 1905).

[20] *Ibid.*, CXLIII, 455-458 (March 20, 1905).

[21] Frances Evelyn Grenville, Countess of Warwick (1861-1928), was born in London and educated at home. A woman of unusual beauty and a popular member of Edwardian society, her marriage to the Earl of Warwick in 1895 was the occasion of a great ball. Criticism of this in the *Clarion* magazine caused her to meet Robert Blatchford, the

among the students, they found twenty boys whom Dr. Hutchinson was able to certify as suffering from malnutrition so acute that it precluded the possibility of their doing any effective school work. Armed with this evidence the group proceeded to the Lambeth Board of Guardians which happened to be in session. This formidable party, including two members of Parliament and a peeress bearing one of the oldest names in England, was received with the utmost courtesy by the shopkeepers and small tradesmen of the Poor Law Board. Orders were immediately given for the out-of-doors maintenance of necessitous children within the Lambeth union. This concession in hand, Gorst and Macnamara returned to Parliament where they obtained the issuance of a circular by the Local Government Board instructing all Guardians similarly to care for children within their jurisdiction.[22]

Gorst was active on the lecture platform promoting the cause of child health throughout the year 1905. Despite his contempt for the Liberals, he was found in September of that year sharing the program with a Liberal candidate at a meeting of the glassworkers' union.[23] It is uncertain whether the passage of nearly all of his health program by that party in the first few years after its advent to power was a result of his election activity, or simply of the intense interest in the subject that had been aroused in the country.[24] It can be said with surety that his behavior lost him the loyalty of the Cambridge University electors who deprived him of his seat in the House of Commons in January, 1906.

Clarion's editor and an important English socialist. Under his influence she took up welfare work and eventually joined the Labour Party.

Thomas James Macnamara, LL. D., St. Andrews, 1898 (1861-1931), was born in an army barracks in Montreal, Canada. He was educated at St. Thomas's, Exeter and Borough Rd. Training College for Teachers. As a board school teacher he became active in union work, eventually winning the presidency of the teacher's union. He entered Parliament as a Liberal in 1900. After the retirement of Gorst, he became a protege of David Lloyd George, who appointed him the first Minister of Labour in 1920.

[22] Gorst, *Children*, *op. cit.*, 86-87.

[23] *Times*, Sept. 4, 1905.

[24] The best estimate would seem to be that the Liberals realized the popularity of health reform at about the time of the January, 1906, election or soon after. No doubt the sensational number of working men elected under their own and other party labels helped to draw the party's attention to the matter. The Liberal manifestos for 1906 give the subject a rather small place, but the great quantity of legislation passed by that party immediately after taking power would indicate a change of mind, and the election pamphlets of 1910 devote much space to its achievements. A comparison may be drawn from the two Liberal pamphlets, *Ten Years of Tory Government* (London, 1906), and *Four Years of Liberal Government*, 1906-1909 (London, 1910).

Gorst's arguments, made in articles, platform speeches, debates in Commons, and finally enunciated in his book, were relatively simple.[25] The maintenance of good health, he urged, was a matter of national as well as personal concern for three reasons. The first was the obvious factor of public safety. Many types of disease were contagious, becoming more so if those exposed were weak or undernourished. The second was the effect of illness on the public economy. The cost to the nation of relieving those adults whose health had been impaired in childhood was tremendous. A healthy race of children, he maintained, would more than repay the cost of its care in less maintenance after the children reached maturity.

The last reason was the most important and the one calculated to appeal to Britons of the early twentieth century. Under the heading of " national interest," Gorst discussed the economic effect of sickness. The sick were non-producers. They contributed no wealth to society, but rather consumed it at an increased rate. How much better, he thought, to spend a relatively small amount to insure that the population suffered no debilitation in childhood and grew into physically fit adults, each able to do his part in keeping Great Britain first among nations. The military importance of good health was so obvious he felt it scarcely deserved mention.

His recommendations, Gorst admitted in his book, would bring upon him " the vague calumny of ' Socialism ' which to a public man is as terrible as it is unanswerable." [26] In addition to the feeding and medical inspection of school children, he advocated the enforcement of laws prohibiting the employment of women for a period before and after confinement for childbirth, the establishment of a continuing anthropometric survey to ascertain whether or not the race was deteriorating, and finally, some system of government medical care.

The last suggestion began to appear more often after Gorst was out of Parliament and is fully discussed in his book and subsequent articles.[27] He thought that a completely tax-supported scheme would be best, but with a politician's eye for possibilities he advocated a health insurance plan as having more Parliamentary appeal. He had studied the German

[25] *Nineteenth Century*, 53 (March, 1903) : 519-532; *Living Age*, 246 (July 22, 1905) : 230-237; *Fortnightly Review*, 83 (May, 1905); 230-237; *North American Review*, 181 (July, 1905) : 1-10; *Forum*, 40 (Dec., 1908) : 569-576.

[26] Gorst, *Children*, *op. cit.*, 7.

[27] *Ibid.*, 140.

system closely, and thought it admirable. He chided the friendly societies of Great Britain for their fear of such a program, pointing out that their counterparts in Germany had prospered. It may have been a coincidence, but less than a year after Gorst's book appeared, David Lloyd George, who was notable as a picker of other men's minds, made his well-publicized trip to Germany to study the social services; the most important result of this tour was the National Health Insurance Bill.

Gorst saw his earlier demands substantially fulfilled by the Feeding of Schoolchildren Act of 1906,[28] the medical inspection clause in the Education (Administrative Provisions) Act of 1907,[29] and the great Children's Act of 1908.[30] The Children's Act was a tremendous piece of legislation, seventy pages long, consolidating previous statutes, but also containing innovations protecting infants put out to nurse, providing penalties for "overlaying," which caused sixteen hundred deaths per year, prohibiting juvenile smoking, and giving effect to much else recommended by the Physical Deterioration Report.[31]

By this time Gorst was out of Parliament and virtually out of public life. Except for one brief and unsuccessful essay at Parliament as a Liberal in the election of January, 1910, he stayed in retirement until his death in 1916. Although he had at one time commanded some attention in Conservative councils, he was never a cabinet member, and his period of greatest influence was relatively short. Nevertheless, in the half century that has passed since the publication of the report of the interdepartmental committee, millions of British children, who have never heard the name of Sir John Gorst, have benefited from his activity. Having a sincere sympathy for humanity, combined with the practicality of an experienced politician, he accomplished much that certain more conspicuous and ambitious reformers of the period found impossible.

[28] Edw. 7, Cap. 57.

[29] 8 Edw. 7, Cap. 43. A clause providing for medical inspection of school children had been included in the Education Bill of 1906 which the Liberals had introduced to undo the Conservative Act of 1902, but it had foundered with the rest of the bill.

[30] 9 Edw. 7, Cap. 67.

[31] "Overlaying" was the accidental smothering of infants who were sleeping in the same bed as their parents. Much of it was thought to be caused by drunkenness, principally because the tragedies usually occured on Saturday night. It was considered quite important by the witnesses before the physical deterioration committee.

FIFTEENTH CENTURY PATIENTS

LYNN THORNDIKE

The *Consilia* of physicians of the closing medieval centuries are usually the record of particular cases in which the physician has been consulted, with a statement of his diagnosis and treatment, whether recommended or carried out. Each *consilium* may mention the patient by name, especially if he was a person of some distinction, or refer to him more vaguely by some such phrase as "this man" or "a youth of such-and-such a place," or "a student of civil law." These collections of medical cases were common in the fourteenth and fifteenth centuries in Italy. The purpose of the present paper is to give some indication of how much new material a systematic exploitation of them all might supply to biographical dictionaries and to intellectual and social history, by considering for illustration a single specimen of the *genre*, the *Consilia* of Bartholomaeus de Montagnana, who flourished in the first half and middle of the fifteenth century. In all there are 309 consilia in the edition of Venice, 1514 which I have used,[1] and yet others are ascribed to him in earlier manuscripts.[2] But our present survey is limited to the 1514 edition.

Ecclesiastical personages for whom Bartholomew composed *consilia* included an archbishop (258), two bishops (17, 66), a dean (264), two archdeacons (144, 267), an archpriest (122), and three abbots (2*, 245, 278). Among his patients from religious orders were four Franciscans (24, 25, 238), including the General of the order (248), and the famous preacher, Bernardino of Siena (238), two Dominicans (11, 59), four Augustinians (8, 43, 141, 290), four members of the order of St. George (97, 118, 119, 262), one unspecified friar (76), and three nuns (111, 159, 196). There were also one named and five unspecified "Reverends" (65, 80, 102, 160, 186) and three doctors of theology (8, 246, 278). These last have already been counted as members of religious orders.

[1] *Consilia domini Bartholomei Montagnane cum tribus tractatibus de balneis Patavinis et de compositione et dosi medicinarum ac antidotariis* . . . etc. The *consilia* proper cover the first 334 leaves and are numbered 1-3 (these I have distinguished by adding an asterisk), and 1-305, but there are two 247's, while 292 is reprinted by mistake for 293.

[2] Thus in Vatican Latin MS 4440, fol. 5vb, "Processus singularis secundum monarcham magistrum magnum Bartholomeum de Montagnana in quodam iuvene Paduano Bonifacio Bucharino 1450 19a Septembris, qui patiebatur fluxum immoderatum ymmo immoderatissimum," is not in the 1514 edition, while of the *consilia* which follow to fol. 68vb, and are here anonymous, two or three are in the edition and the others not.

Four protonotaries, the first papal (1*, 42, 258, 293), no fewer than eight holders of the degree J. U. D. or *Juris Utriusque Doctor* (134, 158, 234, 247, 258, 259, 269, and 293)—the last was also a doctor of arts and a licentiate in canon law (135)—mark the transition from the ecclesiastical to the legal profession. We have also four doctors of laws (90, 170, 182, 270), a jurist (180), a civil lawyer (73), and a young student of the civil law (132).

Passing on to political, feudal, and military offices, we find Bartholomew ministering to the Count Palatine of the Rhine (16) and four other counts (202, 265, 299, 304), to the chancellor of the Duke of Bavaria (128), the orator for the King of Cyprus (134), the podestà of Padua (179), the son of the podestà of Vicenza (38) and a courtier (*curialis*, 56). Also for the *capitano* of the League of All Italy (265), the *capitano* of Verona (127), an *armorum capitanus* (195), and a *provisor castrensis* of Padua (129) who was perhaps a sort of quartermaster. He furthermore gave medical advice to four knights or soldiers (*miles*, 15, 101; *vir in armis expertissimus*, 150; *armiger virilis*, 151) and for the sons of two others (274, 279). He even wrote a *consilium* for an unnamed *colonus* of the March of Ancona (275).

Only once does a fellow physician appear as a patient (194) of Bartholomew, but he was thrice consulted by them as to their cases (68, 256, 260), or mentions two of them as having investigated a case before him (21). But other men of learning than the doctors of law and of theology who have already been mentioned were his patients. Antonius de Risi of Genoa was described by him as "a very well read young man" (23, *literatissimi adolescentis*) and Leonardo de Teramo as *literatissimus vir* (164). The Franciscan, Marcus Venetus, was also a professor in the schools of his order (25). Bartholomew prescribed for the schoolmaster of his native town, Montagnana (96). He characterized other patients as not only a doctor of arts but "a most profound investigator of natural causes" (140) and as "a scientific notable" (227). His patient, Nicolaus de Comitibus (277), may have been the astrologer of that name.[3] One of the knights or soldiers for whom he prescribed but whose name he "for the present concealed," was, however, said to be "moderately erudite and skilled in law and philosophy" (15).

The places with which Bartholomew's patients and cases were connected were numerous and widely scattered. Six of his *consilia* were for Germans, involving, in addition to the Duke of Bavaria and Count Palatine of the

[3] Concerning whom see my *History of Magic and Experimental Science*, IV, 250 *et seq.*

Rhine already noted, two men from Nürnberg (89, 130) and a bishop, probably of Freising (17, *episcopo Frisigiensi*). He advised an abbot of Camarsac near Bordeaux and called *de provincia Anglie*, since England did not lose the territory about Bordeaux until 1453, as to the care of his health while on a pilgrimage to the Holy Sepulcher (2*). Cyprus is mentioned twice (134, 290). Other patients were from Vienna and distant Livonia (80, 135). Most of his cases were Italian but these, too, were widely dispersed over the peninsula although the majority were in the northern part. At least twelve *consilia* were composed for citizens of Vicenza; five each, for those of Verona and Treviso; four, for Paduans and Venetians; three each for inhabitants of Bologna, the March of Ancona, Ragusa, Tiene, and Valle Marana. Twice mentioned were Aquileia, Brescia, Coloreto, Milan, Mirandola or Mirandula, and Roveredo or Rovereto. Two patients were from Siena, but it is mentioned only in the case of Schersonus and not for Bernardino of Siena. Only a consulting physician and no patient was Sicilian. Denizens of Bergamo, Este, Ferrara, Florence, Friuli, Genoa, Parma, Pisa, Rome, Trent, Udine, and Urbino were the subjects each of a single *consilium*. But so were the inhabitants of a number of smaller places: Borgo-San-Sepolcro in the province of Arezzo, Campo Basso, Collalto in the province of Udine and Conegliano in that of Treviso, some place in the diocese of Forlì, the commune of Leniaci which made Bartholomew's nephew its physician, Marino and Porto, both in the neighborhood of Rome, Mercato Novo, Bartholomew's native Montagnana, Teramo in the Abruzzi, Trisinno in the province of Vicenza.

In at least 63 of the 309 cases the patients were females. Many of the *consilia* were for young people: *iuvenis*, five times; *adolescens*, fourteen; *adolescentula*, twice and *adolescentulus*, thrice; *puer*, three times, or four, counting a person who was called both *adolescentulus* and *puer*; *iuvencula* and *iuvenculus*, once each. Much less frequently were *consilia* composed for the very young: once for a child of seven, once for one of five years, and once only for an infant (292, 45, 298). One was written for Bartholomew's son-in-law (1); seven, for close friends of his; two, for Jews (30, 296). Of anonymous males who have not yet been otherwise identified, there remain nineteen who are addressed or described as nobles, and thirty-five who are not so characterized. In a number of *consilia* no particular patient, whether male or female, is distinguished, but a disease or complaint is described and prescribed for, such as epilepsy or paralysis. Of such impersonal *consilia* there are some twenty-five.

Persons are mentioned by name in about half of the 309 *consilia*. I have prepared the following two lists of such, one by Christian, the other by family and place names, and both arranged alphabetically.

ALPHABETICAL ARRANGEMENT BY CHRISTIAN NAMES

Albertus de la Sala, citizen of Ferrara, wife of 207
Ambrosius Contareno 41
Andrea Bernardo 19
Angelus 149
Angelus de Burgo S. Sepulchri 151
Angelus Simonete, comes et capitanus lige totius Italie 265
Antonius Bertoldus, gener meus 1
Antonius Candianus, archdeacon of Vicenza 267
Antonius de Coneglano, adolescens 103
Antonius Porro of Milan 69
Antonius de Risi of Genoa, literatissimus adolescens 23
Antonius de Sancio (Sancto ?) Ioanne 2
Antonius a Scrossa, wife of 204
Antonius de Seiziis, doctor of laws 182
Antonius of Vienna, Rev. 80

Baptista Aliguamine 2*
Baptista of Ancona 139
Baptista Firmanus, civil lawyer 73
Baptista de Valle Marana, wife of 21
Baptista of Vicenza, physician 21
Bartholomeus minus, nephew of Bartholomeus Montagnana 256
Bartholomeus de Serico 165
Bartholomeus de Valamarana 270
Bartholomeus of Verona 138
Benedictus de Valla Matanta (Marana?) 209
Bernardinus (of Siena) 238
Blancha Malipetro, domina 61

Camillus, adolescens, citizen of Vicenza 155
Carlinus of Nürnberg 29
Christoforus de Muzano, Ser 40
" " " his wife 208, 210

Damianus de Foro Iulii 147
Daniel de Crassoldo, dean of Udine 264

Fantitius Venetus 281
Fredericus de Verlactis, of Vicenza 266
Franciscus, aromatarius of Vicenza, wife of 156
Franciscus Bondei, wife of 35
Franciscus Brache, wife of 305
Franciscus de Nordis 175

Gabriel de Candiana 148
Gaietanus 188
Galesius, bishop 66
Gentilis, captain of arms 195
Gentilis de Lionesa 133
Georgio, a Franciscan 24
Georgius de Tabernellis, citizen of Verona 176
Germana Bartholomei, domina, of Ragusa 297
Gregorius de Spineto, J. U. D. 259
Guido 28
Guido Ronaldini 87

Helisabeth de Rovereto 213
Henry, chancellor of Henry, Duke of Bavaria 128
Hieronymus, doctor of theology, Augustinian 8
Hieronymus de patria Foroliviensi 70
Hieronymus de Ponte 33
Hieronymus de Sancta Sophia, doctor of arts, etc. 140

Honofrius, iuvenis 172
Hugutio de Lonico 117

Iacobus Barbarigo, podestà of Padua 179
Iacobus of Brescia, Dominican 59
Iacobus Cornarin, wife of 216
Iacobus de diocesi Forliviensi 157
Iacobus of Rome 32
Iacobus de Thienis, son of 279
Ioanna, wife of Nicolaus 212
Ioannes 174
Io(annes?) Andreas of Treviso, jurist 180
Ioannes de Augustis, Rev. 153
Io(annes) de Bedario 178
Ioannes de Comis, frater 76
Ioannes de Cypro, Rev. Dr. Theology, Augustinian 290
Ioannes Fabrica, Ser, wife of 206
Ioannes Franciscus, amicus meus 142
Ioannes Franciscus de Trisseno 77
Ioannes Gradanico 75
Ioannes de Livonia, licentiate in canon law 135
Ioannes de Mercato Novo 242
Ioannes de Mediolano, Tervisinus 6
Ioannes Niger, Ser 241
Ioannes de S. Apponario 120
Ioannes de Spineto, Dr. of Laws of Treviso 90
Ioannes de Venetiis, daughter of 26

Leona, domina 72
Leonardo of Nürnberg 130
Leonardo de Teramo 164
Leonardo of Trent 115
Lippus of Bologna 239
Lodovicus, count Palatine of the Rhine 16
Luca of Milan 171
Ludovicus de Garconibus 53
Ludovicus Storlado 88

Mapheus Contareno, monk of St. George 97
Marchiana, domina 89
Marco, of Order of St. George of Alega 118
Marco Veneto, Dominican and professor 25
Marcus, Ser 9
Marcus de Nevo of Vicenza, adolescens 271
Marinus 98
Melchisidech, wife of 247 bis

Nicolaus de Canali, *provisor castrensis* of Padua 129
Nicolaus de Comitibus 277
Nicolaus Delphino 154
Nicolaus Perundus 162
Nicolaus Trudus 145

Odorico de Colereto 22

Paulus Pasqualigo, capitano of Verona 127
Petrus de Caballis, citizen of Verona 104
Petrus Donatus, papal protonotary 1*
Petrus de Monte, J. U. D. 234
Petrus de Monte, Rev., protonotary and collector 42
Petrus de Sulmona, physician 21
Petrus de Trisano, citizen of Verona 190
Petrus de Valmarana 274
Philippus, Augustinian 141
Pollissena, domina (and see Pulisena) 100
Prosdocimus of Treviso 82
Prosdocimus de Raymundis, of Venice 197
Protonotarius de Monte, Rev. etc. 258, 293
Pulisena de Thienis, of Vicenza, domina 219

Rainaldus de Ariostris 240
Rainaldus Siculus, physician 260
Raimundus 302
Rambaldus, count of Colle Alto 304

Samuel, a Jew of Roveredo 30
Schersonus of Siena 150

Simon de Berleta 300
Simon de Porto, wife of 67
Spineta, adolescens, citizen of Vicenza 55
Sublimanus, J. U. D. 158
Thomas of Bologna, Dominican 11
Thomeus of Este 177
Ubertinus de Marino, adolescens 4
Vagnolus de Monte Sancto in March of Ancona 27
Victus of Order of St. George of Alega 262
Vincentinus [4] Cripie, adolescens 47
Vincentinus de Siledo 168
Ziliolus de Ursinis, adolescens 14

ALPHABETICAL ARRANGEMENT BY FAMILY AND PLACE NAMES

Aliguamine, Baptista de 2*
Anconitanus, Baptista 139
Ariostris, Rainaldus de 240
Augustis, Ioannes de 153

Baldani 170
Barbarigo, Iacobus 179
Barbaro 65
Bartholomei, Germana 297
Bavaria, Duke of 128
Bedario, Io. de 178
Berleta, Simon de 300
Bernardo, Andrea 19
Bertoldus, Antonius 1
Bondei, Franciscus 35
Bononiensis, Lippus 239
Bononiensis, Thomas 11
Brache, Franciscus 305
Brixiensis, Iacobus 59
Burgo S. Sepulchri, Angelus de 151

Caballis, Petrus de 104
Canali, Nicolaus de 129
Candiana, Gabriel de 148
Candianus, Antonius 267
Colle Alto, Rambaldus, comes de 304
Coloreto, Odorico de 22
Comis, Ioannes de 76
Comitibus, Nicolaus de 277
Coneglano, Antonius de 103
Contareno, Ambrosius 41
Contareno, Mapheus 97
Cornarin, Iacobus 216
Crassoldo, Daniel de 264
Cripie, Vincentinus 47
Cypro, Ioannes de 290

Delphino, Nicolaus 154
Donatus, Petrus 1*

Estensis, Thomeus 177

Fabrica, Ioannes 206
Firmanus, Baptista 73
Foro Iulii, Damianus de 147
Franciscus, Ioannes, amicus meus 142
Franciscus, Ioannes, de Trisseno 77

Garconibus, Ludovicus de 53
Gradanico (Gradenigo), Ioannes 75

Lionesa, Gentilis de 133
Livonia, Ioannes de 135
Lonico, Hugutio de 117

Malipetro, Blancha 61
Marino, Ubertinus de 4
Mediolano, Ioannes de 6
Mediolano, Luca de 171
Mercato Novo, Ioannes de 242
Mirandola, comes de 218
Mirandula, domina de 81
Monte, Petrus de 42, 234
Monte, Protonotarius de 258, 293

[4] This may mean "of Vicenza" rather than be a Christian name.

Monte Sancto, Vagnolus de 27
Muzano, Christoforus de 40, 208, 210

Nevo, Marcus de 271
Niger, Ioannes 241
Nordis, Franciscus de 175
Noriberga, Carlinus de 29
Nuriberga, Leonardus de 130

Pasqualigo, Paulus 127
Perundus, Nicolaus 162
Ponte, Hieronymus de 33
Porro, Antonius 69
Porto, Simon de 67

Raymundis, Prosdocimo de Venetiis de 197
Risi, Antonius de 23
Roma, Iacobus de 32
Ronaldini, Guido 87
Rovereto, Helisabeth de 213

Sabrogano, family of Aquileia 20
Sala, Albertus de la 207
Sancio Ioanne, Antonius de 2
Sancta Sophia, Hieronymus de 140
Sancto Apponario, Ioannes de 120
Scrossa, Antonius a 204
Seiziis, Antonius de 182
Senis, Schersonus de 150
Serico, Bartholomeus de 165
Siculus, Rainaldus 260
Siledo, Vincentinus de 168
Simonete, Angelus 265
Spineto, Gregorius de 259
Spineto, Ioannes de 90
Storlado, Ludovicus 88
Sulmona, Petrus de 21

Tabernellis, Georgius de 176
Teramo, Leonardus de 164
Thelgiazii 187
Thienis, Iacobus de 279
Thienis, Pulisena de 219
Tridento, Leonardus de 115
Trisano, Petrus de 190
Trisseno, Ioannes Franciscus de 77
Trudus, Nicolaus 145

Ursinis, Ziliolus de 14

Valamarana, Bartholomeus de 270
Valla Metanta, Benedictus de 209
Valmarana, Petrus de 274
Venetiis, Ioannes de 26
Venetiis, Prosdocimus de Raymundis de 197
Venetus, Fantitius 281
Verlactis, Federicus de 266
Verona, Bartholomeus de 138
Vincentinus, Baptista 21
Vulpe, cognomine a, nominato 163

SOME PLASTIC REPRESENTATIONS OF DISEASE MADE BY EARLY MAN *

ANDERSON NETTLESHIP

Of early artifacts, plastic, tridimensional objects, like stone or ceramic sculptures, have best withstood the passage of time and have come down to us in relatively unchanged condition. Created by the hand of early man, they present a real challenge when we try to analyze their possible value in the treatment of disease. We have no clear understanding as to why early man wished to make a plastic record of disease. Perhaps it helped him combat disease in the manner of ex votos. But there is no doubt that a number of erroneous notions cloud our understanding. The problem may be approached from the standpoint of the sculptor and from that of the pathologist. What is known of early man's reactions to illness may shed additional light. It is hoped that the present investigation, though incomplete, may extend our insight.

The material with which we are to deal consists of statuettes from the Egyptian and Pre-Columbian Indian cultures. As to their artistic value, these figures range from those which are well executed to crude and primitive ones. In the form of ceramic pots, they often served utilitarian purposes. As objective a viewpoint as possible is necessary when this material is examined in order to ascertain whether or not the figures actually represent disease, although in some of them diseases are depicted in a readily recognizable and most realistic fashion.

It is fortunate for us that early man found his creative outlet in such indestructible materials as stone and fired clay, since such records are often the only ones we have from periods when the written word had not yet made its appearance. In some civilizations, the figurines continued to be made after writing had come into general use, and thus form a link with a more distant past.

We may try to find out what early man thought about disease by imagining ourselves members of the culture in which he existed. But at best, this is not an easy feat. Modern man finds it difficult not to apply his rational mind and wide medical knowledge to what was before him. He sees a certain shape, and his own information about disease

* Based on a paper read at the twenty-sixth annual meeting of the American Association of the History of Medicine, Columbus, Ohio, April 10, 1953.

makes him believe that this is early man's representation of disease. We tend to forget that religion and magic dominated early medical thinking and, most important, that tribal motives controlled the manner in which the sculptor worked as well as the appearance of his finished product.

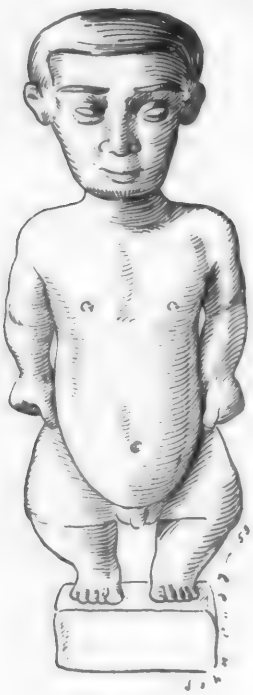

Fig. 1.

This figure is quite small, being less than six inches in height. At the present time, the surface is brown with a light green overshade. The pleasant expression on the face, the close cropped hair and the tense arms and legs of the achondroplastic dwarf are well shown.

Fig. 2.

This limestone tomb figure measures approximately 14" in height and is well carved. The statue shows true dwarfism. Some paint still clings to the surface and the eyeballs are still painted black.

From the standpoint of the sculptor it is possible to set up a group of criteria which may help to distinguish between those parts of an object that are sculptural and cultural necessities and those which are not. We can then decide what may be medical or non-medical. In the first place,

we have to consider the material worked with. In the more primitive societies this is always ceramic-clay, terra-cotta, or unglazed earthenware; occasionally we also find small stone carvings. These materials limit the sculptor's capacity to record " medically " what he sees and knows about sickness. Moreover, the sculptor tends to express whatever he does in the

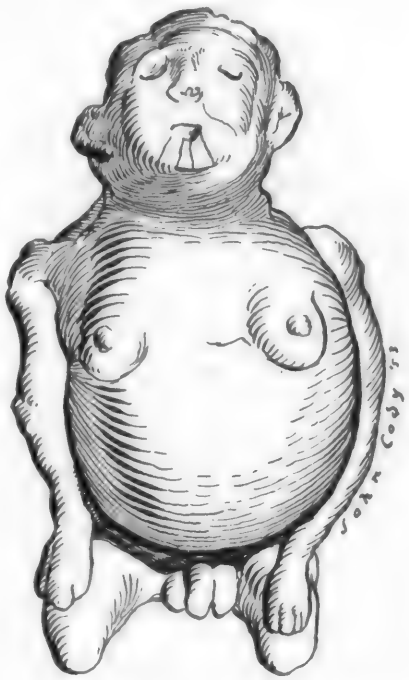

Fig. 3.

A small clay figure, in bisque, crudely executed, it none-the-less shows gynecomastia, swollen abdomen, small testes and female posture.

particular style and fashion which culture and environment force upon him. Particularities of this kind must not be confused with supposed pathological forms. The stage of development is also important in evaluating the artistic objects. It is sometimes surprising how sophisticated even a very early people's sculptures may be. Examples of " cultural " distortion are to be found in body distortion, the elongation of body types seen in ancient as well as modern " primitive " societies. Other groups

may shorten all body parts, emphasizing the head, the neck, or genitalia. To some extent, emphasis is placed upon the part of the body anatomy that interests the sculptor or medicine man most.

As an example of the necessity of studying all plastic representations in the light of their cultural context, the Metternich Stela (1) may be

Fig. 4.

A pot figure in fired clay. Emphysema? Humpback?

referred to. Here, writing and carved forms occur in the same object and we find what to us appears a most irrational mixture of religious, factual, and magic notions. The Egyptian did not differentiate between commanding divine help, i. e. magic, and praying for such help, i. e. religion. The stela deals with the prevention of disaster and illness, frightening away of a serpent, and exorcising poison from a cat. The cat is identified

as a goddess. In one register we see Horus, the child, on a crocodile, holding serpents, scorpions, an oryx, and a lion, all malign animals; on either side are divine symbols and over the head of Horus appears the face of Bes, and guardian of newborn infants.

Figures 1 and 2 give other examples from ancient Egypt. They show

Fig. 5.

A sculptor's fancy. A frog figurine, utilitarian and somewhat humerous in spite of its grotesqueness.

small tomb figures in limestone, from the 5th and 6th dynasties. Figure 1, with its disproportion of trunk and head to arms, is clearly that of an achondroplastic dwarf. In figure 2, a true dwarf figurine or hump-back is carrying a waterskin or sack. Dwarfs were widely used as servants in ancient Egypt and placing statuettes of them in the tomb gave the person buried use of these people in the hereafter. Incidentally, the custom has given us very fine portrayals of disease conditions. The execution,

here, is accurate, factual, and done with finesse. Other pathological conditions, represented in bas-relief, in the Egyptian tombs are talipes equinus (often considered as being produced by poliomyelitis) and a foot operation. Blind musicians, or possibly musicians with their eyes closed,

Fig. 6.

This figure is quite large. It is made of a pink clay material. Tatoos are evident, as is a marked gibbus.

are shown in Nanupkau's orchestra and a blind harpist, in a fresco from the tomb of Ramses III.

The statuettes of the Toltecian-Aztec and Pre-Columbian mid-American Indians studied, possibly go back to 1500 B. C., but no exact dates can be assigned to them. Like the Egyptians, these peoples were already civilized at the time the statuettes first appeared. They grew crops, lived in villages, and had a stylized ritual art-medicine. Materials from the

area of the Folsom type findings place the earliest age of man in this hemisphere at 8000 years ago. Tepexpan man's age is variously given at 12,000 to 9,000 years ago.

The craftsmen of the civilization to which these statuettes belong seem to have been less expert than those of the early Egyptians. All of the

Fig. 7.

A woman in childbirth. Was the labor a face presentation or is the representation the liberty of the sculptor? Note elaborate dress. The original is black in color.

figurines studied are realistic; although the workmanship is often admirable, some examples show poor plastic execution. Figures 3, 4, and 5 are from the cave areas in Northern Arkansas. Figure 3 shows wrinkles at the edges of the mouth, a swollen abdomen, gynecomastia, and small testes. At first congenital syphilis was considered as a possible diagnosis. On closer examination, however, the greatly enlarged abdomen (ascites), small testes, and gynecomastia suggest cirrhosis of the liver with ascites and loss of masculine characteristics. The posture, crouched on legs rather than crosslegged, is that assigned by Indians to females. Figure 4 shows a somewhat hunched back and emphysematous chest.

The facial structure is typically Indian. Figure 5 is a fanciful frog-like figure with wide open mouth and bulging legs. It possibly represents elephantiasis, but it is more probable that the enlarged legs were so constructed in order to accommodate more water. Other figures belonging to this group show clear evidence of tatooing, and the shape of one head is strongly suggestive of acromegaly.

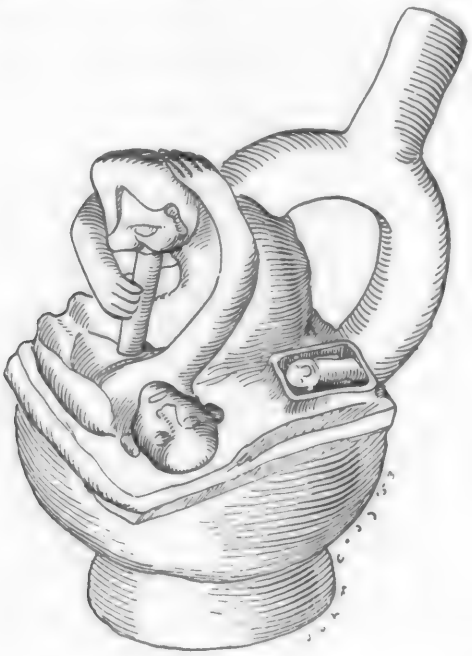

Fig. 8.

The shaman, bends over the ill mother who has just had a baby. In his hand a hollow reed to suck out the evil spirits. The figurine is mounted on a pot whose finish is light brown in color.

The statuettes found in Mexico are from the same cultural group. Those most extensively studied are said to be Toltec in origin (2), and one of the more elaborate and well executed is the hunchback dwarf shown in figure 6. There are many interesting features in this figure: the face is tatooed, the gibbus marked, and the right hand holds a cane. The double headed fish, on which the figure stands, is said to be a good luck

omen. Figure 7 is a woman in childbirth. The elaborate clothing is worth noticing as is the facial position of the fetus. Figure 8 is said to be Peruvian. It shows a medical man or shaman bent over the mother after delivery, the baby lies in a basket at one side, a hollow reed is placed on the mother's abdomen—apparently spirits are being removed by the

Fig. 9.

This small statuette is fired in bisque. Although crudely executed, it is very realistic in representating pain on the subject's face.

process of sucking on the reed. The exact medical significance of figure 9 is doubtful. The projection of the heartlike structure on the anterior chest wall and the left hand grasping this area might indicate pain. The monkey faces on each shoulder are known to be symbols of pain. This interpretation, if correct, would indicate angina pectoris pain referred to the shoulders. Figure 10 may represent a convulsion, the facial expression with closed eyes and protruding tongue, and the bands on the body may

point to epilepsy. However, the figure could be representative of any convulsive disorder with the bands depicting restraints, or indicating convulsive waves.

Other Pre-Columbian figures studied, but not reproduced here, showed evidence of a number of diseases of the skin, especially a variety of skin

Fig. 10.

Fired in bisque this figure is done in a light brown clay, of somewhat better execution than figure 9. Its exact medical meaning is debatable.

eruptions, some gross facial disorders such as cleft lip, goundou, and questionable syphilis. A number of figures showed amputations but, strangely enough, no trephining, an operation well known from skulls which have come down from those times.

In spite of the lack of exact chronological evidence, the terra-cotta and stone figures from Egyptian and Pre-Columbian cultures obviously point to the existence of civilized communities with settled populations and well established medical and sculptural traditions. It may be fair to

draw the general conclusion that no clear distinction existed in early man's mind between the emotional and rational approach to his medical problems. A rational attempt to cure disease may have existed very early but, like today, if this failed, the emotional or religious solution was sought for. The objects of this study often show a direct and even naturalistic depiction of disease, but they probably had an apotropaic character, having been endowed with magic virtues or believed to represent a god.

Addendum

It would be of importance to know whether objects like those discussed in this paper existed in the early phases of all civilizations the world over. I have recently received from Professor Stuart Piggott of the Department of Prehistoric Archaeology, University of Edinburgh, a letter on the clay figurines found in the early Indus civilization. He states that some of the figurines found in the Harappa area have been claimed to show pathological conditions.

ACKNOWLEDGMENTS

Without the help, generosity, and encouragement of the following individuals and institutes, this survey would not have been possible.

1. For the Egyptian material, the Curator, Mr. Pierr De Longez, of the Oriental Institute, of the University of Chicago.
2. For the middle American material, Mr. Samuel Dellinger, of the University of Arkansas Archeological Museum.
3. For the Mexican material, Dr. Howard Dittrick, of the Cleveland Medical Museum.

REFERENCES

1. Scott, N. E. The Metternich Stela, The Metropolitan Museum of Art Bulletin, IX, 201, 1951.
2. Dittrick, H.: Pre-Columbian Terra cottas of Medical Interest in the Cleveland Museum. Symposium on Pre-Columbian Medicine, Am. Assoc. of the History of Medicine, 26th Meeting, April 1953.

A KLIPPEL-FEIL SYNDROME IN THE ARTISTIC WORKS OF WILLIAM BLAKE

M. ELAINE MARTIN *

William Blake, the English painter, engraver and poet who lived from 1747 to 1831, has been the subject of considerable controversy. His works have either been hailed as those of a mystic of rare genius, or dismissed as nothing more than " the obscene hallucinations of a fever-stricken dwarf possessed by the figures of Michael Angelo." According to Craven, " He cared little for human form as such, and his idea of artistic anatomy amounted to almost nothing; his figures bear a superficial relationship but taken from their context are no more than stock forms—lay figures drawn from memory, and poorly drawn."

Recurring throughout Blake's drawings is the figure of an old man with flowing white hair and beard. It is the " stock form " for many roles, including those of Job and God, the Father. The form is peculiar in that there seems to be no neck. The large head appears to be set directly on, or even to be sunken between the shoulders, with the chin resting on the chest. God is depicted in this particular manner in Figure 1, which is a reproduction of part of a page from Blake's *Illustrations of the Book of Job*, completed in 1825.

Such a deformity does occur. Its morphologic peculiarity was described in 1912 by Klippel and Feil, and is now termed the " Klippel-Feil syndrome." In the original description the clinical features were: absence of the neck, lowered hairline and limited movement of the head. At autopsy a reduction in the number of cervical vertebrae was found—the vertebrae being replaced by an osseous mass and the thoracic cage rising to the cranium. Erskine, in a recent discussion of the condition concluded that " the essential features of the cervical deformity are synostoses of two or more cervical vertebrae and flattening and widening of the vertebral bodies. A numerical reduction of the vertebrae is an incidental rather than an essential part of the disorder, as is spina bifida." He also wrote that " the consensus regarding the cause of the Klippel-Feil syndrome is that it is a disorder of segmentation." However, several medical dictionaries.

* Department of Anatomy, University of Saskatchewan.

FIG. 1.

From Blake's *Illustrations of the Book of Job.*

departing from the original description, associate it with arthritis and suboccipital Potts' disease, particularly.

Blake's figures, repeated many times in his drawings which were made about one hundred years before the first report of Klippel and Feil, seem to be striking illustrations of this syndrome. Except that the heads occasionally appear to have more freedom of movement than this condition would allow, Blake's " patients " present the characteristic appearance.

It is interesting to speculate as to whether Blake drew these figures because of his lack of skill as a draughtsman, or with an artistic effect in mind, or, whether Blake, apparently an extremely sensitive and impressionable man, was obsessed by the sight or memory of a person actually having this condition. Since the apparent malformation occurs only in old men with long beards, the " Klippel-Feil " individuals in Blake's engravings may well be father-images.

Summary

A similarity is pointed out between the figure of an old man, apparently having no neck, which recurs throughout William Blake's drawings, and the appearance of persons suffering from what is nowadays known as the Klippel-Feil syndrome. Possible motivation for Blake's repeated drawing of such a form is discussed.

REFERENCES

1. Craven, Thomas: *Men of Art*, New York, Simon and Schuster, 1931.
2. Erskine, C. A.: An Analysis of the Klippel-Feil Syndrome. *Arch. Path.*, 41: 269, 1946.
3. Keynes, G., ed: *William Blake's Engravings*, London, Faber and Faber, 1950.
4. Klippel, M. et Feil, A.: Un cas d'absence des vertèbres cervicales. *Nouvelle Iconographie de la Salpêtrière*, 25: 223, 1912.

THE HISTORY OF THE DISCOVERY OF PANCREATIC DIABETES

MARTIN M. NOTHMAN

> "The discovery that removal of the pancreas produced a fatal diabetes was perhaps the greatest single contribution to the study of diabetes and one of the most brilliant discoveries in medicine." (Ralph H. Major, *Classic Descriptions of Disease*, p. 204).

Minkowski discovered pancreatic diabetes in 1889. For eight years (1919-1926) I had the good fortune to be an assistant of this master of experimental investigation and I will tell the story of this great discovery as I have heard it from his own lips on several occasions.

As is true of many scientific findings the relationship of diabetes to the pancreas owed its discovery to the play of chance. When von Mering and Minkowski performed their first extirpation of the pancreatic gland they did not do it with the intention of studying carbohydrate metabolism. Von Mering was occupied with the problem of fat absorption in diseases of the pancreas. He had suggested the use of "lipanin" as a substitute for cod liver oil in diseases of this organ. Lipanin is an oil to which six per cent of free oleinic acid has been added. At a fortuitous meeting von Mering asked Minkowski whether the medical clinic at Strasbourg, where Minkowski was an assistant professor, used lipanin. Minkowski answered jokingly, "Why should we give the patient fat that has been made rancid artificially?" "Don't try to ridicule what I say," replied von Mering, and added, "The splitting of fat is of greatest importance for the absorption of the fats. Defective function of the pancreas decreases the absorption of unsplit fats. The beneficial effect of cod liver oil depends on its content of free fatty acids. Minkowski asked, "How have you proved it?" "I have tried to ligate the ducts of the pancreas," answered von Mering, "in order to demonstrate that under these conditions neutral fat is absorbed more poorly than fat which contains fatty acids, but I did not succeed in excluding the pancreatic juice from the intestine by this operation." "Well, why not remove the pancreatic gland?" said Minkowski. "That is impossible," was the answer. Minkowski having performed successfully the difficult operation of extirpation of the liver in geese a short time before, believed he had sufficient surgical skill and answered with apparent

youthful rashness, "Why should it be impossible? Bring me a dog and I will remove the pancreas."

The same day von Mering sent a dog to the laboratory of Naunyn's clinic. Twenty-four hours later Minkowski assisted by von Mering extirpated the whole pancreas. The animal survived the operation remarkably well. Neither Minkowski nor von Mering anticipated what fundamental facts in metabolism were to be discovered by the operation they had just completed. They did not think of diabetes at all and did not even examine the urine of the dog for sugar.

In Naunyn's laboratory all dogs used for metabolic research were trained to expel urine and excrement in vessels held for them. The dog operated by Minkowski emptied its urine in the room repeatedly. Therefore, Minkowski blamed the diener, but the diener answered: "I don't know what is the matter with this dog. It seems to empty the bladder completely, and then a few minutes later urinates again." Obeying a sudden impulse Minkowski took a pipette, bent over the urine emptied on the floor, collected some cubic centimeters of it and examined it for sugar. Its reducing power was extremely high, in fact the urine contained more than ten per cent of sugar. Minkowski's first idea was that the dog may have received phlorizin, a drug known to produce glycosuria and which von Mering had been using. Therefore, he operated at once on several more dogs. All of them developed a severe diabetes.

Immediately after the performance of the first operation, von Mering left Strasbourg for eight days because of severe illness in his family. When he returned, Minkowski was able to inform him that the total removal of the pancreas was regularly followed by diabetes mellitus. The experiments dealing with the absorption of fat were put aside in order to study diabetes first of all. Having started the experiments together and exchanged many ideas about the results, Minkowski and von Mering published the first papers jointly. As von Mering had never performed the operation himself and failed to assess the significance of the experiments as Minkowski did, he left to Minkowski the pursuit of the discovery. In a paper read before the "Naturforscherversammlung" at Heidelberg in September, 1889, concerning the relation between the diseases of the pancreas and human diabetes mellitus, Minkowski drew the conclusion that many, perhaps even all cases of true diabetes of human beings are related to disturbance of pancreatic function.

The discovery of pancreatic diabetes was at first the result of chance only. But it was fortunate that von Mering and Minkowski made this

observation because they were prepared by their long painstaking studies of diabetes to pursue their discovery most profitably.

It was maintained on different sides that the true discoverer of pancreatic diabetes was the diener in Naunyn's laboratory. Likewise we have been told that the discovery of the x-ray is owed to the cleaning woman in Roentgen's laboratory who by chance put her rag on the cathode tube. Yet Roentgen was able to draw some conclusions from the discovery which the cleaning woman could never had done.

In a lecture about Truth in Science, Minkowski once said, " A scientific truth that has existed for twenty years is a very great truth." Minkowski's work on pancreatic diabetes remained unshaken in its fundamentals during the fifty years and more that have passed since its publication.

MEDICO-HISTORICAL NEWS AND ACTIVITIES

CORRESPONDENCE AND REPORTS

SAMUEL CLARK HARVEY (1886-1953)

Doctor Samuel Clark Harvey, Professor Emeritus of Surgery and later of Oncology at Yale, died suddenly on 22 August 1953 of a ruptured dissecting aneurism of the aorta. At the time of his death he was a member of the staff of the Department of the History of Medicine at Yale, having served since the Department was founded in February, 1951, and he was also acting as Chairman of the Program Committee of the American Association of the History of Medicine for the meeting which is to be held at Yale in May, 1954. While not a professional historian, Harvey had long been closely associated with medical history which, during his years in surgery, he had used as an effective device for the teaching of surgery itself. He was also chief Editor of *The Yale Journal of Biology and Medicine*, and in discharging his duties as Editor he unconsciously gave expression to his broad philosophy of medical education. As an educator he had been an active protagonist of more liberality in the medical curriculum, insisting on a greater degree of freedom and larger elective opportunity than had been accorded to students in most American schools. His beliefs in this sphere were first outlined in 1941 in a paper entitled " The Objectives of Medical Education " (*Yale Journal of Biology and Medicine*. 1941, *13*: 847-862) the full text of which was reprinted in the September number for 1953 in association with a warm appreciation of Dr. Harvey by Max Taffel, one of his junior colleagues.

Harvey grew up on a small farm in Washington, Connecticut where he was born on 12 February 1886. His friends in Connecticut and in the broader reaches of American surgery respected him for his directness and integrity, for his reserve and, as one of his associates recorded,[1] for " the quiet but devastating wit which has so often been attributed to the New England Yankee." Sam Harvey was a gifted judge of men, and he was ever a source of worry to his colleagues because he generally thought more rapidly than did they. He could speak tersely and with relevance not only on matters pertaining to surgery but on many other subjects far removed from his immediate sphere of interest. Those who came to know him more intimately in his later years, and who had penetrated his cloak of modesty, recognized him as a man with a brilliant, philosophical turn of mind who was perhaps as widely informed as any of our contemporaries in medicine.

Harvey had had part of his training with Harvey Cushing, first at the Peter Bent Brigham Hospital, and later at the Harvard Unit in France (Base Hospital No. 5) where he was serving as captain. While in France, Dr. Cushing often used to turn to Sam as the one person who could always solve any major argument in medical or general history. Indeed, Cushing once exclaimed when at the front

[1] Thomson, Elizabeth H. Samuel Clark Harvey—Medical Historian (1886-1953). *J. Hist. Med.*, 1954, *9*: 1-8, 1 pl.

in France, "There is no need for having an *Encyclopedia Britannica* if Sam is around!"

Harvey, as a teacher and as a surgeon, illustrated brilliantly the Oslerian dictum that medical history is most effectively taught at the bedside and in the clinic, and that this was a primary responsibility of any full-time clinical teacher if he were to educate students in the broadest sense. But he would also have been the first to recognize that basic research, such as can only be carried out in full-time departments of medical history, should be fostered in the more forward-looking medical centers of the world. Harvey himself had planned to devote his later years to research in the history of surgery, and to the infinite regret of his friends and of all medical historians, the great general history of surgery which he had projected, and on which he was working at the time of his death, will unhappily not see the light. He was as well equipped to write such a book as any surgeon of our generation.

JOHN F. FULTON

MEDICAL HISTORY IN GRADUATE EDUCATION

The following part of Dr. Radbill's letter to the Editor is published because of its bearing on the teaching of medical history.

At the instigation of Dr. John Porter Scott, Chairman of the Department of Pediatrics, I received, three years ago, the appointment as lecturer in the history of pediatrics from Dr. Aims C. McGuinness, Dean of the Graduate School of Medicine in the University of Pennsylvania. So far as I know, this is the first such lectureship in graduate education that has yet been established. The idea originally germinated in the mind of Dr. Herman Beerman, Chairman of the Department of Dermatology in this school, when he incorporated into the regular curriculum of his course a series of lectures on the history of dermatology and syphilology, each lecture being given by a different speaker covering a special historical topic in which the speaker was particularly well versed.

In my own course of six lectures on the history of pediatrics, I have arranged a systematic outline covering various subjects of particular value to the practicing pediatrician. The class is made up of students who are all graduate physicians, having been out in medical practice for varying lengths of time, and who are taking the formal course in pediatrics with the intent to qualify themselves for this specialty. The students come not only from Philadelphia, but from Pennsylvania and every other state in the Union as well as from Porto Rica, Cuba, and other countries of Latin America, the Philippines, Japan, India, Siam, etc. The subject matter must thus be adjusted to cover the needs of diverse nationalities, among whom the students will go forth to practice, to do research, and to teach.

After an introduction on the values of a historical approach to pediatrics, a rapid survey is made of the bibliography of the history of pediatrics. Next follows the development of foundling homes, hospitals, and other institutions for the care and welfare of children. This includes the evolution of the various fields of medical

care and welfare auxiliary to the practice of pediatrics. Then various topics are developed like the procedures peculiar to hospital practice; segregation of the sick child from the adult; isolation; aseptic techniques; care of the premature; surgery in childhood; etc.

The history of pediatric literature and journals devoted to pediatrics, and a short talk on the technique of writing a medical paper is then followed by the story of the pediatric societies and meetings brought out in the light of the influence such things exerted in the development of our specialty.

To infant feeding, so important in pediatric work, an entire lecture hour is devoted. Another lecture is given by Mrs. Ella N. Wade, Curator of the Mütter Museum at the College of Physicians of Philadelphia, on the history of instruments used in pediatrics, and the rich store of museum treasures serves well to illustrate the development of the thermometer, the stethoscope, the microscope, the blood pressure instruments, the otoscope, the cystoscope, feeding utensils, and such like, all taken so much for granted in everyday practice today.

In another lecture, a rapid survey of some important diseases peculiar to childhood, and the gradual evolvement of the modern emphasis on preventive medicine, growth and development of the normal child, and the historical basis upon which many modern therapeutic practices are based, is then presented.

For the final lecture, Mr. Walton B. McDaniel, 2nd., Curator of the Library Historical Collections, and Mr. Elliot H. Morse, Librarian, supply many of the early books on pediatrics for actual inspection and discussion. From the early Greek, Roman, and Arabian writers, to the pediatric incunabula, and thence to the continuous flow of pediatric texts up to the present time, we are able to demonstrate a more or less unbroken progression of the growth of medical philosophy in practice pertaining to the child.

In presenting the past, the present and future are always kept in mind. Primarily, those historical figures are mentioned who initiated the way of thinking we adhere to today, in our everyday medical life; those books and writings are described in such a way as to connect them with the literature the doctor reads and writes, and the development of techniques and mechanical devices utilized in this machine age of ours is traced back as far as possible.

SAMUEL X. RADBILL

CORRECTION

The following note has been received from Dr. Robert Multhauf for publication in the Bulletin.

In the article, " Medical Chemistry and ' The Paracelsians,' " by Robert Multhauf, which appeared in the *Bulletin*, vol. 28, No. 2, March-April, 1954, it was erroneously stated on p. 124 that the remedy " mercurius dulcis " was identified by George Urdang in the introduction to the facsimile of the first edition of *Pharmacopoeia Londinensis* (Madison, 1944) as mercuric nitrate. " Mercurius dulcis " was identified by Dr. Urdang as mercurous chloride. The error in substituting " mercuric nitrate " for " mercurous chloride " is the responsibility of the author of the above article.

ANNOUNCEMENTS

AMERICAN ASSOCIATION OF THE HISTORY OF MEDICINE

Officers Elected

The following new officers were elected at the twenty-seventh annual meeting of the Association in New Haven, Conn., May 6-8, 1954: President, George W. Corner; Vice-President, Benjamin Spector.

Erwin H. Ackerknecht, Lewis J. Moorman, Richard H. Shryock, and Henry R. Viets were elected members of the Executive Committee. The new Editorial Committee will consist of Lloyd G. Stevenson (chairman), W. F. Norwood, and Madeline Stanton. Nominating Committee: John F. Fulton (chairman), Ralph H. Major, and Hebbel E. Hoff.

Awards of Medals

At the twenty-seventh annual meeting, announcement was made of the following awards:

The William Osler Medal for the best student essay submitted was awarded to: Robert J. T. Joy, Yale University School of Medicine, for his essay on "The Natural Bonesetters, with Special Reference to the Sweet Family of Rhode Island: A Study of an Early Phase of Orthopedics." Honorable mention, with one year's subscription to the *Bulletin*, went to: Ilgvars Henry Upmalis, University of Western Ontario Medical School, for his essay on "The Introduction and Reception of Lister's Treatment in Germany," and to Mark N. Ozer, Boston University School of Medicine, for his essay on "The Vivisection Controversy in England."

The William H. Welch Medal was awarded to Martha Teach Gnudi and Jerome Pierce Webster for their publication: *The Life and Times of Gaspare Tagliacozzi, Surgeon of Bologna, 1545-1599.*

NATIONAL NEWS

American Academy of the History of Dentistry

The Academy announces its third annual meeting for Friday, November 5, at the McAllister Hotel, Miami. Friday has been chosen for the day of meeting to avoid conflict with the many other meetings scheduled for Saturday.

Avicenna Celebration

On May 20, 1954, the New York Academy of Medicine and the Asia Institute Association held a Commemorative Meeting on the Thousandth Anniversary of Avicenna. Iago Galdston presided over the program which included the following addresses: "What Avicenna means to the Persians," by Ali Gholi Ardalan, Ambassador of Iran to the U. N.; "Avicenna's place in the history of science," by George Sarton, Harvard University; "Avicenna and his cultural background," by Arthur Upham Pope, Chancellor, Asia Institute Association. Because of Dr. Sarton's absence due to illness, his paper was read by McIver Woody. Contemporary manuscripts and works of art from Avicenna's time, lent by members of the Asia Institute Association, were exhibited at the New York Academy of Medicine where the meeting took place.

Chicago

A lecture series on "Medicine and the Humanities" is being held at the Chicago Medical School on seven subsequent Tuesdays beginning April 6, 1954. The program is as follows:

"Why we become doctors," Noah D. Fabricant (University of Illinois College of Medicine)

"Religio Medici, 1954," Samuel J. Zakon (Northwestern University Medical School)

"Medical Symbolism in Painting and Sculpture," Leo Zimmerman (Chicago Medical School)

"Disease and Art," Ilza Veith (University of Chicago)

"Resurrectionists," Leslie B. Arey (Northwestern University Medical School)

"Medical Caricatures," Israel Davidsohn (Chicago Medical School)

"Milk Sickness," Frederick Stenn (University of Illinois College of Medicine)

David L. Drabkin (University of Pennsylvania, Philadelphia) will deliver the eleventh annual D. J. Davis lecture on medical history on May 12, 1954, at the University of Illinois College of Medicine. Dr. Drabkin will speak on "Thudichum —a neglected genius of the nineteenth century—the man."

The Chicago Society of Medical History has elected the following new officers: President, Ilza Veith; Secretary, Leo M. Zimmerman; Council: Barry J. Anson, George H. Coleman, David J. Davis, Earle Gray, Ella Salmonson, Lowell Snorf, Nell Snow Talbot, Drs. Zimmerman and Veith, *ex officio*.

Kansas

On the occasion of the fifth series of the Clendening Lectures on the History and Philosophy of Medicine, given by Dr. Douglas Guthrie of Edinburgh, the following prizes offered by Dr. Carlos Guffey to students of the University of Kansas Medical Center were announced: First prize ($100) to Thomas J. Fritzlen for his paper on "Johannes Müller, the father of scientific German medicine." Second prize ($50) to Reuben J. Burkman for his paper on "Gout: a brief review of its history." Jack M. Catlett received honorary mention for his paper on "Molière and seventeenth century medicine in Paris."

New York

The Mount Sinai Hospital announces a Seminar in the History of Surgery for April 21, 1954, with the following speakers: (1) Isadore Mandelbaum: "Theodore Billroth and the beginning of gastric survery" (Discussion: Richard Lewisohn). (2) Joseph Levin: "History of cardiovascular surgery" (Discussion: George H. Humphreys, II).

Personalia

Dr. Lloyd G. Stevenson has accepted a position as Associate Professor of the History of Medicine at McGill University and Honorary Librarian of the McGill Medical Library as of July 1, 1954. Dr. W. W. Francis will remain in charge of the Osler Library where Dr. Stevenson will serve as Assistant Librarian.

NEWS FROM ABROAD

Germany

The German Society for the History of Medicine, Science, and Technology will hold its annual meeting at Sigmaringen, September 25-29, 1954.

GEORGE SARTON. *A History of Science: Ancient Science through the Golden Age of Greece.* Cambridge, Mass.: Harvard University Press, 1952. xxvi + 646 pp. Ill. $10.00.

This is the first of eight projected volumes, intended to reproduce "not the letter but the spirit" of Professor Sarton's two-year cycle of lectures at Harvard University. It is written for his former students, for historians of science, and "also for educated people in general, but not for philologists" (p. vii). It is safe to predict, however, that the latter will be among its most assiduous readers, for increasing numbers of them are expecting for classical philology a new lease on life in the service of the history of science.

Here is the ripe fruit of a lifetime of research and teaching. In nearly all parts of the world there are students like myself who have followed the author's work from a distance, have been faithful readers of *Isis* and *Osiris*, have used the indispensable reference tools provided in the critical bibliographies in *Isis*, in the massive *Introduction to the History of Science*, and more recently in *Horus: A Guide to the History of Science*, and who have discerned behind these severe and formidable publications a wise, witty, and vibrant man, and have wished that they might have gone to school to him. It is now our privilege to do so. We are none of us too far advanced in our studies to learn from him. And we shall all be praying that both he and we may live to finish the course.

The first volume brings us from prehistoric times down to approximately 300 B. C., with some glances ahead into the subsequent development of schools, movements, or investigations begun before that time. What we are offered is not history of science in any narrow or exclusive sense, but cultural history with the focus on science. Dr. Sarton has supplied two common omissions—Oriental science and Greek superstition. Under the former, however, only Egypt and the Near East are included, whereas the *Introduction* included India and the Far East as well. On the other hand, the *Introduction* began with the age of Homer, which the present volume does not reach until page 130.

The chronological distribution of space may be roughly indicated by saying that the book is divided into three nearly equal parts: Oriental and Greek Origins (pp. 3-217); The Fifth Century (221-391); The Fourth Century (395-605). The first of these parts covers a historical period of nearly three thousand years.

There are 103 illustrations, including maps, charts, tables, diagrams, and reproductions of monuments, statues, reliefs, models, seals, clay tablets, papyri, and of over forty title-pages and other pages of printed books, chiefly first editions of Greek texts or of Latin translations of them.

Readers of the *Bulletin* will be particularly interested in the place assigned to medicine. "The main misunderstandings concerning the history of science are due to historians of medicine who have the notion that medicine is the center of science" (ix). For Sarton, the center is mathematics. Working out from it, we come to astronomy, physics, chemistry, geography and geology, biology and

its various branches, then the "humanities" and the social sciences, and only thereafter the applications of these branches of knowledge to human needs in the forms of technology, medicine, and education. The general plan of treatment, therefore, is to sketch for each period the social background, introduce the leading scientists, and then describe their contributions to the several fields in about the above order.

This turns out, however, to be a matter of arrangement rather than of the allotment of diminishing amounts of space. Approximately eighty-five pages, nearly a seventh of the volume, are devoted to medicine. Nevertheless the striking difference of perspective will heighten the interest of readers of the *Bulletin* in comparing from time to time Dr. Sarton's treatment of episodes in medical history with that in Dr. Sigerist's *History of Medicine*, also in eight volumes, which promise to appear apace with Dr. Sarton's eight.[1]

Though the present volume covers only a small part of the range of Dr. Sarton's erudition, there are very few specialists in the period who could have written it with equal authority, and perhaps none who is competent to review it as a whole. Yet any reviewer will find errors to correct and opinions to challenge in those parts of it in which he is most at home. The remainder of this review will be largely devoted to just such criticisms.[2]

As a consequence of writing the history of science as the history of culture with the primary focus on science, he has given us accounts of the Greek philosophers which, if excerpted and connected, would constitute a history of Greek philosophy from the pre-Socratics through the early Stoics, Epicureans, and

[1] Many readers will remember an exchange between the two coryphaei nearly twenty years ago, in Sarton's preface to vol. 23 of *Isis*, "The history of science *versus* the history of medicine," and Sigerist's preface to vol. 4 of the *Bulletin*, "The history of medicine *and* the history of science." (In certain respects the present volume of Sarton's *History* takes insufficient account of recent Hippocratic scholarship, as Owsei Temkin has noted in his judicious review in the *Journal of the History of Medicine and Allied Sciences* 8: 223-226, 1953.)

[2] I have noticed about a hundred and fifty typographical or clerical errors, most of them trivial or easily corrected. Several names and titles have been substituted for others: Greek for Roman (60[4]), *Ancient medicine* for *Nature of Man* (245[20]), *Republic* for *Timaios* (405 line 45), Arrian for Nearchos (526[18]), Theopompos for Eudemos (547[00]), *History of animals* for *History of plants* (556[101]). The winter and summer solstices have taken each other's places on 174 and 175, and in note 32 on the latter page the following words should be deleted: corresponding angles a^1 and a^2 are the zenith this. On 288, line 15, for "inhabited" read "uninhabited." On 525, line 19, "air, sea, and water," read "air, sea, and land." The entry for the non-existent Theopompos of Rhodes should be deleted from the index. Arcelisaos should be corrected to Arcesilaos on 399 (twice) and in the index on 619 and (under Pitane) on 638. All references in the index to pages 606, 607, 608, 609, and 610 should be to pages 609, 610, 611, 612, and 615 respectively.

The transliteration of Greek characters and the Romanizing or Anglicizing of Greek names are difficult problems. I regret Sarton's substitution of *c* for *k*; *u* for *ou*; *y* for *u*; *rh* for *hr*; and his neglect of the iota subscript. On names he has no consistent policy; on the same page (222) appear Thermopylae and Plataiai; and many names occur in two or more forms.

Sceptics; a short history, to be sure, yet longer and better than some that have been separately published. In the treatment of philosophers in the present context, we might fairly expect two major emphases: first, on their direct contributions to science, and such of their theories as, though perhaps unverifiable by the instruments and methods then available, are within the scope of natural knowledge; and second, on their general conceptions of science, their theories of the nature and criteria of knowledge, their contributions to logic and to scientific methodology.

Surprisingly little of the first, and almost nothing of the second, will be found in the present volume. What really interests its author is rather the moral and religious temper, the social and political sentiments and involvements, the human sympathies and aspirations of the philosophers; and, as concerns science, their emotions about it even more than their contributions to it.

Thus there is not to be found in the entire volume a clear statement of any ancient theory of the nature of sense perception, of concepts or universals, of physical laws, of propositions, of signification, of truth and falsity, of verification, of deductive or inductive proof, of definition, postulation, hypothesis, observation, or experiment. This is in fact the greatest weakness of the work— that, in a history of science which gives so much space to philosophy in general, so little should be given to the philosophy of science in particular.

Of the physical speculations of the philosophers, on the other hand, there is nearly always some report, good as far as it goes, but meager in proportion to that of less essential matters, and lacking precision in detail. Take as a first example the case of Anaxagoras (241-245). There is a vivid account of his life, his friendship with Pericles, his indictment for "rationalism," and his banishment from Athens; but the brief sketch of his physical theory (242) does not distinguish "powers" from "seeds" and omits altogether the crucial doctrine of there being "a portion of everything in everything," for which a mathematically precise interpretation was recently supplied by Gregory Vlastos.[8]

The next philosopher in Sarton's order is Parmenides (245 f., 288). He was a logician and a metaphysician, and the fact that he was also a poet does not quite redeem him in Sarton's eyes. His famous dictum, "It is the same thing that can be thought and that can be" (often mistranslated "Thinking and Being are the same"), is a master-key to the understanding of ancient science as well as of ancient philosophy. Sarton does not quote it. If he had, he would have been less

[8] "The Physical Theory of Anaxagoras," *Philosophical Review* 59: 31-57, Jan. 1950. Let me illustrate by a few further examples the kinds of work that might have contributed toward the two emphases I miss in Sarton's book. (1) F. M. Cornford, *The Laws of Motion in the Ancient Greek World*, 1931; J. B. Skemp, *The Theory of Motion in Plato's Later Dialogues*, 1942; Paul Friedländer, "Structure and Destruction of the Atom according to Plato's *Timaeus*," *Univ. of Calif. Public. in Philos.*, 1949; Friedrich Solmsen, "Tissues and the Soul: Philosophical Contributions to Physiology," *Philos. Rev.* 59: 435-468, 1950. (2) J. I. Beare, *Greek Theories of Elementary Cognition*, 1906; Richard Robinson, *Plato's Earlier Dialectic*, 1941; Jan Łukasiewicz, *Aristotle's Syllogistic*, 1951; I. M. Bochenski, *Ancient Formal Logic*, 1951; Benson Mates, *Stoic Logic*, 1953. My objection is not that Sarton fails to cite these particular works (the last-named of course came too late), but that he does not often use or cite works of these *kinds*, though his bibliographical references are in other respects abundant.

likely to say that according to Parmenides non-Being "cannot exist, yet it can be thought and expressed" (245).

Of Empedocles we are told that there is "one experiment to his credit that would suffice to give him an honorable and permanent place in the history of science. That experiment, with a clepsydra, enabled him to prove the corporeality of air" (247). But the clepsydra was a familiar kitchen utensil, and Empedocles probably did no more than observe its ordinary uses and adduce them in illustration of a foregone conclusion.

Sarton asserts too positively that for Democritus "there are no gods" (254). Later on he says that the microcosm-macrocosm distinction "had already been made by Democritos" (421) and refers to the present section (251) for the evidence, but it is not there; the reference should be to page 177, note 38. Part of the evidence there given is that Democritus "is said to have written treatises entitled *megas cosmos* and *micros cosmos*." But in fact they were entitled *Megas diakosmos* and *Mikros diakosmos* (i. e. a longer and a shorter treatise on the world-system) and there is no reason to suppose they had anything to do with the microcosm-macrocosm distinction.

The account of Epicurus (588-599) is warmly sympathetic and justly appreciative. But even here there are inaccuracies, arising in part from an impulse to mitigate his materialism. What can possibly be meant by saying that "For Epicuros fire (heat), wind (breath), air were elements added to the atoms" (590), or that "his 'nameless' element of the soul opened the door to occultism" (591), or by speaking of "spiritual entities" (590) and of matter becoming "more and more spiritualized" (591)? The "elements" (including the 'nameless' one) and the "spiritual entities" are atomic in precisely the same sense in which the grossest bodies are.

Epicurus's theology is sadly misunderstood. "He claimed that gods exist; one must look for them, however, not in the stars but in the hearts of men" (592). "God's existence is proved by the goodness in man" (593). "God created the world, then withdrew from it and left it to its own evolution" (593). The first statement is very misleading; the second and third are quite wrong.[4]

Fortunately, on Aristotle, the most important of the philosophers and at the same time of the scientists, Sarton is at his best, and his best is very good. Between fifty-five and sixty pages are devoted to Aristotle, not counting those on his colleagues and followers in the Lyceum, or those on his pupil Alexander the Great. Yet his logic is disposed of in one page, which affords little more than a partial table of contents of the *Organon*, and which is marred by the blunder, "the syllogism and its correct figures" (500).[5]

[4] The last sentence of the long quotation from Epicurus on p. 593 is mistranslated by Hicks, but Sarton is not accountable for that.

[5] Of the next best work in logic, that of the Stoics, the few appreciative lines on 602 tell us almost nothing. (See now the book by Mates listed in n. 3 above.) Apropos of the Stoics, on 605 we read: "The Stoic teachings were born in Asia, found their form in Athens, and attained their maturity and popularity in Rome." This is a neat summary of a common opinion, but it would be more accurate to say that they were born in Athens, found their form in Athens, and attained their maturity and popularity in Athens. Their popularity elsewhere was consequent upon their popularity in Athens.

Apart from this deficiency, I note some minor inaccuracies. Aristotle's Unmoved Mover is represented as "influencing all the celestial motions as the Lover influences the Beloved" (510). (Read instead: "as the Beloved influences the Lover.") The *Nicomachean Ethics* is said to be larger than the other three ethical treatises put together (567). (This is true only if, for no reason, the three books which are identical in the *Eudemean* and in the *Nicomachean Ethics* are counted in the latter and not in the former.) Sarton says in one place (567[10]) that "The *Magna moralia* is certainly by another person." In another (569) he is uncertain as to the author—"was he Aristotle, or did he simply repeat the master's sayings?" We are told that Aristotle "made a comparative study of some two hundred constitutions of Greek cities" (570). (The number was one hundred and fifty-eight.)

These last are venial faults in what is on the whole the most satisfying part of the book. When we turn from Aristotle to his teacher Plato and his pupil Alexander we find workmanship of quite a different sort. These two are the most complex personalities with whom Sarton has to deal in the present volume. His conceptions of them have been radically altered since he wrote the first volume of his *Introduction*, and altered, I believe, for the worse. His vision of Alexander has been distorted by W. W. Tarn (485[36]), and his vision of Plato by Karl Popper, Benjamin Farrington, and Warner Fite (408[25]).

Alexander's expeditions into Asia are no longer merely a great turning point in military and political history, with vast but unforeseen social and cultural consequences, eventually touching science; they are deliberate exploits of heroic proportions in the scientific enterprise itself. Alexander is a "scientific organizer" (526) moved by "intellectual ambition," subsidizing Aristotle's researches directly, and accompanied by "naturalists collecting specimens for the Lyceum" (490). "We may imagine that the *mot d'ordre* had been given to his scientific entourage, that whatever Aristotle asked for should be granted and that every novelty should be communicated to him. Hence the richness of Aristotle's biological point of view" (543), and hence also the breadth of Theophrastus's botanical knowledge (554 f.).

Even more important than his service to science was Alexander's vision of human brotherhood. He was "the first" to perceive "the unity of mankind" and he thereby showed his "moral superiority" to Plato and Aristotle, who distinguished Greeks from barbarians (488). "It would have been natural for him to continue the evil tendencies of Plato and Aristotle. The fact that he was able to overcome unaided those tendencies is the best proof of his genius" (489).[6]

These, I believe, are additions by Drs. Tarn and Sarton to "the Alexander

---

Sarton has in mind the "three giants," Seneca, Epictetus, and Marcus Aurelius, and I share his affection for them, but surely they represent a stage long past the maturity of Stoicism.

[6] "Did he dream of a world empire? Probably not in a conscious way, but his nemesis obliged him to conquer more and more" (488); "he might have become a greater man than he was if unfortunate circumstances had not forced him to conquer the world" (490). "It is not probable that Alexander dreamed of a world empire but it is almost certain that he dreamed of world *homonoia* (*concordia*)" (489). "Alexander's dream of a world united under Greek hegemony was too premature to be realized" (490).

romance" (491). There is no reliable evidence that any important contribution to science or philosophy by Aristotle or by anyone else resulted from Alexander's assistance, or that "the unity of mankind" (which Alexander was not "the first" to discover)[7] was anything more than a tactical maneuver. So confused is Sarton's portrait of Alexander that he can say on the same page, a dozen lines apart, first that "It is much to Alexander's credit that he was able to raise himself to *a higher plane* than his tutor" and second that "as he himself was idolized he was exalted to *so high a plane* that all men appeared equal in their inequality to him" (488, my italics).

Enough of Aristotle's pupil. Now for his master. In mathematics, "Aristotle was sound but dull; Plato was more attractive but as unsound as could be . . . Aristotle was the honest teacher, Plato the magician, the Pied Piper" (502). In their conceptions of the ideal state, "what a difference between the blind dogmatism of Plato and Aristotle's sweet reasonableness!" (571). Plato "was not a man of science"; and on the other hand "He was not interested in individuality or personality, and hence we cannot call him a true humanist" (426). Plato's realism (the doctrine of the reality of the forms or Ideas) "made . . . scientific knowledge impossible" (403); "it is not 'operational': abstract good is no good and one cannot ride an ideal horse. The opposite method (nominalism, the *via moderna*) . . . prepared very gradually the way for modern science" (404).

"The *Republic* is the work of a disgruntled fanatic" (412). Plato's communism of women and children can be explained only "in terms of sexual aberration" (*ibid.*). In his proposals for censorship of literature "he was about on the same level as those great literary and artistic critics, Thomas Bowdler and Adolf Hitler" (413). Plato was "always very conscious of his noble ancestry" (396); "Persian autocracy and order seemed to him far superior to Athenian democracy and chaos" (41); his "definition of justice was chosen to strengthen his totalitarian conceptions" (419).

"The influence of [Plato's] *Timaios* upon later times was enormous and essentially evil . . . I cannot mention any other work whose influence was more mischievous, except perhaps the Revelation of St. John the Divine" (423). "The astrologic

[7] It was asserted a century earlier, for example, by Antiphon the Sophist. (Philip Merlan, "Alexander the Great or Antiphon the Sophist?", *Classical Philology* 45: 161-166, 1950.) On 256-259 Sarton gives an account of "three illustrious Sophists of the golden age," Protagoras, Gorgias, and Antiphon the Orator. On 285 f., in the chapter on fifth century mathematics, he describes a contribution by Antiphon the Sophist. In a footnote he says: "Not to be confused, as he has often been, with his contemporary, Antiphon the Orator, who . . . is important in literary and political history, but does not concern the historian of science at all." Unfortunately, Sarton himself has made confusion worse confounded by including the Orator under the Sophists and omitting the Sophist altogether except for this brief mention under mathematics. Instead, he should have omitted the Orator entirely and substituted on 256-259 an account of the much more remarkable philosophic ideas of Antiphon the Sophist, who really belongs in the company of Protagoras and Gorgias, as the Orator does not. If Sarton had done this, he would not only have avoided the confusion he deprecates, but he might well have tempered his later eulogy of Alexander.

nonsense that has done so much harm in the Western world and is still poisoning weak-minded people today was derived from the *Timaios*" (421).

Thucydides, "a scientific historian, the first in the world's history" (318), gave to his great work on the Peloponnesian War the structure of a Greek tragedy, culminating in the disastrous expedition to Syracuse. This first volume of Sarton's *History* works up to a dramatic climax in another expedition to Syracuse, that of Plato—whose "friendship with Dion . . . was ominous, for himself, for Dion, and for Syracuse" (397[3])—and in the two "betrayals" that came in its train: "the great betrayal" of Socrates by Plato, who in his dialogues "made his old master say the very opposite of what he had taught," and the betrayal perpetrated upon *us* by the Plato scholars who have "glossed over his totalitarianism and his views on the communism of property, women, and children" (419). (It does not occur to Dr. Sarton, in his wrath, that, if both Socrates and we were indeed thus betrayed, the first betrayal should have been cancelled by the second.)

Amid such indignation, one is not surprised to find inaccuracies of detail. In his account of the Platonic Ideas, Sarton says: "If we define the circle as a closed plane curve every point of which is equidistant from a point within, we create an Idea, the ideal or essential circle" (432). (But Plato's Ideas are not mental creations.) "Plato conceived a kind of mathematical *quadrivium*, but curiously enough it did not include music" (434). (But Plato's well-known program of higher studies in the *Republic* most emphatically did include music.) We are informed (427[88]) that Ammonius Saccas in his life of Aristotle has him say, "Socrates is dear to us, but the truth is dearer still." (Instead, it is Plato to whom the saying is there ascribed.) "Among the friends who attended [Socrates's] last moments were Echecrates of Phlios, one of the last of the Pythagoreans . . ." (271). (Echecrates was not one of the last of the Pythagoreans, and he was not present.) "In the *Protagoras*, Plato speaks of a young man who goes to visit Hippocrates the Asclepiad of Cos to learn medicine" (337). (More exactly, Socrates asks his young friend what the great Hippocrates would make of him if he went to study under him, which he has no intention of doing.) The allegory of the cave is distressingly misinterpreted as meaning that "We are like prisoners in a cave who are aware of outside events only because of the shadows projected upon the inside walls" (402[16]). Sarton says Plato's Republic "would be perfect by definition and changeless"; "Plato seems to have believed . . . that political change might be arrested" (410). (But this is to ignore Books VIII and IX of the *Republic*, which trace the decline and fall of the ideal state.)

Sarton says the purpose of his chapter on "Plato and the Academy," which occupies thirty-five pages, "was to destroy the false image of Plato that many generations of adulators have created" (427). Now this is just what Messrs. Fite, Farrington, and Popper set out to do. They succeeded in compelling us to look more closely and sharply at passages in Plato's dialogues and to consider more critically some implications of his thought which we have too often ignored or passed over lightly. In this they have done us a great service, a service which perhaps they could not have performed without malice aforethought, or without consequent exaggeration, distortion, caricature, and suppression of contrary evidence. At the same time they have done us the religious service of offering

up Plato as the scholar's scapegoat for the sins and fears of World War II and of pre-war Nazism and pre- and post-war Communism.

But these functions have now been sufficiently served, and I am sorry that Sarton felt called upon to repeat the performance. His own work, so generous in conception and on the whole so genial in execution, is essentially of another order, and it may take the scholarship of half a century to supersede it. In such a work we look for historical sobriety and for judgments that will remain standing when the hysteria shall have passed, when Plato will again appear a teacher not unworthy of the pupil who became "the master of those who know."

If Sarton's *History* is brought to completion, as I fervently hope it may be, there is a strong probability of its establishing a new cultural pattern. In an age dominated by science, the history of science may well be the only flourishing "humanity," and the others may survive only as its auxiliaries, and only if a view of the history of science as generous as Sarton's prevails. Let us hope, however, that there will remain a few specialists in philology and in the history of philosophy (for examples), and that the historians of science will take full advantage of the labors of such specialists.[8]

MAX H. FISCH

NICOLAI STENONIS *Epistolae et Epistolae ad eum datae.* Cum Prooemio ac notis Germanice scriptis edidit Gustav Scherz. Adiuvante Joanne Raeder. Hafniae: Nyt Nordisk Forlag; Friburgi: Verlag Herder, 1952. Vol. I: XXXII, pp. 1-480. Vol. II: III, pp. 481-1027. Ill. D. M. 105.

With this publication of Niels Stensen's letters, the modern edition of the "Opera Omnia" of the great scientist and religious has been completed. The first two volumes edited in 1910 by V. Maar contain all the scientific treatises, notably those on the excretory ducts of the parotid and lacrymal glands, on myology, notably the muscular nature of the heart, on the brain and, above all, the fundamental work on crystallography. The theological works followed in two large volumes 1941-47 and have been reviewed in this *Bulletin* (1948, vol. 22, pp. 720-722). While there was little of immediate historical-medical and scientific interest in these, the present work, in particular its first volume, forms a first class collection of documents illuminating science and medicine in their decisive phase of development, the late XVIIth century and especially the time up to 1670. It is then that the dramatis personae change and scientists and medical men are replaced by dignitaries of the church as Stenonis' correspondents. The letters to Thomas Bartholinus are concerned with Stensen's priority in the discovery of the parotid duct (against de Blaes), also with controversies with various Dutch anatomists, such as Deusing and Bils about lymph vessels and the lacrymal gland,

[8] The present volume contains no summary view of ancient science, nor any connected treatment of the problems encountered in composing such a view. Perhaps something of the sort will be offered at the end of the second volume. Meanwhile, the best discussion known to me is by Ludwig Edelstein, "Recent Trends in the Interpretation of Ancient Science," *Journal of the History of Ideas* 13: 573-604, 1952.

and later with Stensen's observations on the heart muscle which his correspondent recognises as fundamental. Then we find Stensen moving in Thévenot's circle at Paris, which he addresses on the brain—opposing Willis and Descartes. In Italy he is conversing and experimenting in conjunction with Redi, Viviani, and Malpighi. He met the latter at Rome in May, 1666, and at Bologna in February, 1669. Indirectly the letters shed light on detail in the life of Spinoza, Leibniz, Swammerdam, and many other Savants of the time as well as the learned activities of the academies. Above all, the life of Stensen himself unfolds itself in an incomparable series of first hand documents from his student days in the Anatomy at Copenhagen up to his tireless activities as a Bishop of the Roman Church.

Of particular value are the "Additamenta." These contain a full genealogical tree of the Stensen family illustrated by extensive biographical detail, here proffered for the first time. Then, there is a selection from the "Chaos—Manuscript," excerpts collected by Stensen the student in his last year (1659) and started about one month after the famous night of February 10th-11th, when Stensen himself probably helped to rebut the Swedes from the ramparts of Copenhagen. The text gives those passages which Stensen himself marked as particularly important. They show the wide range and wisdom of his scientific reading, ideas, and sentiments. For example: "In Physica nihil scimus praeter experimenta et observationes, eaque quae ex ipsis juxta principia metaphysica et mechanica deducuntur" (No. 152, p. 921). And: "Sic in medicina nihil nisi voces pronuntiare discimus, quarum singularum non absona aliquando significatio, junctarum vero nullus idoneus sensus . . ." (No. 153, ibidem). Leibniz' critique of Stensen's letter to Spinoza ("De vera philosophia ad novae philosophiae reformatorem") appears here in full ". . . il me semble que Mons. Stenon suppose trop de choses pour persuader un homme qui en croyoit si peu. . . . Spinoza dira sans doute que les promesses sont belles, mais qu'il a fait un voeu de ne rien croire sans preuve." Leibniz answers Stenson's admonitions to Spinoza. He points out that religious passion does not normally further clarity of thinking, that outside the Roman Church there were wisdom and sanctity, "que la vraye perfection ne consiste pas en ce que bien des gens s'imaginent, mais dans la perfection de l'entendement et dans l'empire sur les passions." One need not know everything and if one fails to explain how the soul is united with the body, this does not preclude the discovery of other important facts and there is no reason why an ordinary, well instructed and experienced man who is not a saint should not know better the nature of body and spirit than the saints themselves. But in spite of all criticism, Leibniz expresses his high esteem and love of Steno: "Car je croy de reconnoistre en luy un zele animé d'une veritable charité . . ." (Lettre Hannover 1677, Additam. No. 13, p. 929). There are further scientific fragments, for example, one on the nervous system and transmission of nervous impulses (? 1684; Additam. No. 24, p. 949). The funeral oration given by P. Cornelius Moy, S. J. (1686; Add. No. 27, p. 955) mentions that Stensen was actuated in the first place by scepticism—aroused by his discovery of fundamental errors in the teaching of one of the professors at Leyden. "Bestehen also die fundamenta ewrer Künsten, viellweniger wird es dan einen Bestand haben mit den Fundamenten des Glaubens." It was from this position of scepticism that he found his way to that of imperturbable belief.

The editing of the mass of documents is most careful, the introductions deal

with all the personal, literary, and ecclesiastical data at great length, and the production of the book as a whole is magnificent. It is not easy, however, to handle these two "elephant" quartos and it is regrettable that the fundamental works on the History of Medicine and Science do not seem to have been used. The great Biographical Lexicon of Hirsch, Gurlt, and Wernich appears under the name of some minor revisors.

WALTER PAGEL

GIOVANNI MARIA LANCISI, 1654-1720. *Aneurysms.* The Latin Text of *De Aneurysmatibus*, Rome, 1745. Revised, with Translation and Notes by Wilmer Cave Wright. New York: The Macmillan Company, 1952. xxxvi + 362 pp. Frontispiece. $7.50.

This book consists of the second part of Lancisi's "De Motu Cordis et Aneurysmatibus," translated from the fourth volume of Lancisi's *Opera Omnia*, Rome, 1745, with the omission of certain miscellaneous reports contributed by Lancisi's correspondents and inserted by his editors from unpublished materials in the Bibliotheca Lancisiana. The translation is accompanied, on facing pages, by the Latin text, very slightly modernized.

The elaborate prefatory apparatus opens with a brief note by Dr. Wright. This is followed by Pietro Assalto's biography of Lancisi, originally published in the *Ephemerides Naturae Curiosorum* and addressed to Morgagni. Assalto's elegant biography is a model and a jewel. Beginning in medias res, it describes Lancisi's final illness and autopsy, and then gives the story of his life. Lancisi is depicted as an ardent student of basic sciences, especially mathematics, chemistry, botany, and anatomy. Always industrious, he kept profuse notes of case histories and completed many volumes of clinical and anatomical records. As his reputation grew and he became the favored consultant of cardinals, popes, and nobles, he developed into the typical harassed scientist, struggling to continue productive investigations while constantly distracted by the demands of official duty. The memoir concludes with a portrayal of his physical characteristics. The total effect is one of clarity, completeness, and grace.

The main body of the volume consists of a long introductory note by Dr. Wright, Lancisi's text with translation, arranged in sixty-one propositions distributed among seven chapters, plus twenty-five pages of notes by Dr. Wright, and an index.

The translation bears every mark of careful workmanship and is obviously the product of an experienced scholar. This is most evident in passages where Lancisi produced an unusually intricate piece of rhetoric, which Mrs. Wright has properly broken up into two or more English sentences, with improvement in clarity. There are also numerous instances of especially felicitous translation. Thus *spes effulget* (p. 49) is given as "a ray of hope"; *res est omnino conclamata* (p. 28) "the battle is lost"; *duobus abhinc resupinae incuriae mensibus transactis* (p. 148) "when two more months of this careless indifference had gone by." There is an agreeable absence of "having beens" and other black beasts of Latin-English translation.

In the notes and introductory material there is one important omission to be deplored. This is the absence of a definition of aneurysm as the term was understood by Lancisi. This defect is partly supplied by a concise statement on the dust-jacket. Lancisi himself attempted to define aneurysm as "a more or less impaired or wholly suspended cohesion at some point, of the contractile villi that compose the texture of the arteries and the heart, from which cause there arises either a pulsating tumor of the artery or a violent flux of blood out of the artery." He regarded aneurysms as not constituting a single malady, and he distinguished separate categories of genuine and spurious aneurysm. "I call genuine those that arise from causes close at hand when they weaken the tissues and powers of resistance of the arteries and heart; I mean those that in a short time destroy or at least enfeeble the firm strong web of the villi. . . . But I call spurious those that in the beginning do not depend on weakened resistance of the villi and fibers that compose the heart and arteries, but rather on the increased force of the impetus . . . that propels the blood."

From these and other passages it is clear that Lancisian aneurysm included intra-arterial and circumarterial ecchymosis and haematoma, as well as dilatation of the heart and of the great veins, in addition to the several types of lesion which are the aneurysms of the present era.

The great merit of Lancisi's contribution, as displayed in the present volume, lies not in specific technical discoveries but in the careful collection of clinical facts and their correlation with autopsy findings. In this respect he leads directly to Morgagni, to Laennec, and to the contemporary internist. It is for this reason that to-day's physician hears a familiar tone in Lancisi's remark that "poor patients are usually questioned with too little attention by physicians; and the patients themselves are equipped with too untrained intelligence and likewise estimate and describe their troubles with too little accuracy."

Especially impressive is Lancisi's total grasp of the aneursysm problem as is shown in his effort to cope with etiology, pathogenesis, morbid structure, and morbid function, and in his effort to clarify the mechanism by reference to hypotheses based on haemodynamics.

For the historian the De Aneurysmatibus contains innumerable indicators which point toward the past or the future. Here are a few: evidence of thorough scholarship (so uncommon to-day!) applied to scientific problems; persistence of humoral concepts; interest in physics, reflecting the influence of Galileo and Bellini; mention of the human body as *machina* (p. 154); recognition of heredity, occupation, and mental perturbation as causes of disease; a statement of the backward failure concept of circulatory insufficiency (pp. 271, 309).

It is to be hoped that the New York Academy of Medicine, under whose imprimatur the present work appears, will add to its services by inspiring a translation of the "De Noxiis Paludum Effluviis" in similar format.

SAUL JARCHO

ZACHARY COPE. *The Versatile Victorian: Being the Life of Sir Henry Thompson, Bt., 1820-1904.* London: Harvey and Blythe, Ltd., 1951. xi + 179 pp. Ill. 12s. 6d.

Sir Henry Thompson, Bt., was born a year later than Queen Victoria and survived her by three years. In a chronological sense he was the complete Victorian. In other ways—in energy, rectitude, and strength of will, in taste, tone and temper, in the cut of his coat and the luxuriance of his cavalry mustache—he was no uncharacteristic child of his time. But despite his professional and social eminence, despite his agility in climbing the ladder and his firmness of grip when he reached the top, he does not hold a place among the great Victorians. Like the meteoric display of the Leonids, which he watched with friends in 1866, he was once a tremendous spectacle; like the Leonids, he has failed to reappear in splendor. He never entered a competition in which he did not gain the laurels, but the laurels have withered and blown away.

Thompson was privately educated and assisted his father in business as grocer, draper and tallow chandler until he was twenty-seven. After less than a year as apprentice to a country practitioner, he started work at University College Hospital, qualified with distinction, married Miss Kate Loder, a concert pianist, and set up in practice in Wimpole Street. He cut short his honeymoon in order to work for the Jacksonian Prize, which almost inevitably he won. His prize essay on *The Pathology and Treatment of Stricture of the Urethra* appeared as a book in 1854 (fourth edition 1885). A few years later he published a second book, *The Enlarged Prostate*. Eight other books on various aspects of urology were to flow from Thompson's pen before the close of the century. From Jean Civiale, celebrated Parisian lithotritist, he learned the stone-crushing technique which brought fame and fortune to master and pupil alike. By 1862 Thompson was beginning to be internationally known as a surgeon specializing in urinary diseases. When Civiale and Langenbeck both failed to cure or relieve Leopold of Saxe-Coburg, King of the Belgians and uncle of Queen Victoria, Thompson was summoned to the Palace of Laeken, achieved a dramatic success with the lithotrite, was rewarded with a fee of £3000 (plus £1000 for a later examination) and found himself, quite unsurprised, at the top of the heap. In 1873 he was called to operate on Napoleon the Third. He was also consulted by the Royal family of England. Thompson earned a large income by nine months' work in the year, for he usually took about three months annual holiday. In 1874 his practice was so great that he felt obliged to resign his appointment at University College Hospital. The introduction to the catalogue of his great collection of a thousand stones shows that 95 per cent of the cases were private patients.

Thompson's professional work was summed up by Buckston Browne, his one-time assistant, in these words: "Sir Henry Thompson modified several surgical instruments. No man can claim the modern lithotrite as his invention, but Civiale undoubtedly was its father, and Thompson, assisted by Weiss the London surgical instrument maker, added the cylindrical handle. Thompson, inspired by Civiale, was an exponent of the importance of delicacy of manipulation of all urethral operations. He helped to bring the operation of lithotrity to perfection. He was a pioneer in the revival of the obsolete operation of supra-pubic cystotomy, and

he was the very first to remove a growth from the urinary bladder. He was a superb clinical teacher and his little book *Clinical Lectures* can still be read with profit." According to Douglas Powell, Thompson "never fully grasped the methods of antiseptic surgery, although he never expressed any adverse opinion upon them." He failed to see the possibilities of the cystoscope, and thought that removal of part of the prostate for obstruction could only be of some use in early cases.

Thompson's lengthy vacations were never spent in idleness. Sometimes he visited clinics and spas. More often he gave himself to one of his hobbies. He inspected art galleries; he painted pictures himself; he collected Nankin porcelain; he was said to have the best poultry yard in England; he cultivated astronomy; he was a connoisseur of food and wines; he was a zealous host. Under the pseudonym, "Pen Oliver," he published two novels, *Charley Kingston's Aunt* (1885) and *All But* (1886). These and other hobbies he pursued fiercely but briefly: in most cases his ardor soon cooled.

In addition to all this, Thompson was a social reformer. He was one of the founders, and for many years the President, of the Cremation Society, and published two books on cremation; he advocated better means of death certification and a more sanitary method of collecting rubbish; he was Vice-President of the British Sanitary Institute; he argued in favour of abstinence; he campaigned for the opening of art galleries and museums on Sunday.

In personality Thompson was self-assured, dogmatic and at times overbearing. Sir Robert Hutchison described him as "formidable," but he could apparently exercise great charm. At Laeken he set about winning over Leopold's doctor, smugly reporting to his wife on his success. He set great store by his acquaintance with royalty. He was on friendly terms with everyone who was anyone. At the same time he was apparently capable of real attachment.

This is a readable book about an able careerist and dilettante, a man of many talents, who was also, it must be confessed, something of a bore. Thompson played Casanova with the arts and sciences: his conquests were many but his loves were few. He made and managed a fortune admirably, yet one's final impression is that of rich gifts sadly squandered on a succession of whorish hobbies and brief infatuations. Nevertheless, his wasteful versatility did not preclude solid achievement in urological surgery.

LLOYD G. STEVENSON

DOROTHY STIMSON. *Scientists and Amateurs: A History of the Royal Society.* New York: Henry Schuman, 1948. xvi + 270 pp. Ill. $4.00.

This volume is one of the books in *The Life of Science Library.* It is intended for that hard-to-identify person, the "general reader"—which usually means that the style is lighter and less formal, the contents non-technical and less specialized, and the format lacking in footnotes and other scholarly furniture. Miss Stimson's book contains a very few footnotes and a sketchy bibliography; otherwise it would appear to meet the specifications listed for the "general reader."

Perhaps it was the supposed prejudices of the general reader that led the author to employ a biographical approach to the Royal Society. Of course, the activities of the founders and the leaders in the Royal Society cannot be omitted, but there is almost no attention to the forces—economic, political, social, and intellectual—which gave rise to the Royal Society, and its immediate precursors in England are very inadequately treated while its foreign precursors are essentially ignored. The first part of the title, then, is a far better description of the work than the second; for this is not, in any mature sense of the word, a history.

The book seriously lacks balance. To all intents and purposes, it peters out shortly after 1800 (more than 200 of the 270 pages are devoted to the affairs of the Society before 1820), and the materials dealing with the more recent period are confined to the reform in membership, new housing, new lectures, the Soirées, cooperation with other scientific groups at home and abroad, and financial growth. Obviously, this unbalance derives from the secondary sources already in existence upon which Miss Stimson largely depended. As Birch and Weld together have carried the story only into the early nineteenth century, and Lyons deals only with administrative and financial matters in the more recent period, the author lacked a solid, systematic history of the Royal Society for the past century, and was forced to rely upon Presidential addresses and a few other scattered accounts. The result is sorely inadequate.

Even in the account of the Society from its founding until 1800, the book gives the reader no clear impression of what the Society was organized for, what took place at its meetings, or the role it played in the patronage, collection, and dissemination of "experimental philosophy." Much—too much, in this reviewer's judgment—attention is given to the critics and the criticism of the Society, although neither the *Minutes* of the Council nor the *Journal-Books* of the Society's meetings supply evidence to show that the Society itself took these attacks seriously, or, with one exception, considered them at all. On the other hand, a number of disputes *within* the Society, the policies as determined by the Council, alterations in the nature of the membership and proceedings of the Society—these are matters which the book hardly touches upon. To be sure, the author attempts to portray the Society in relation to the broad political and intellectual currents of the times in which it was operating, and these efforts are the most successfully accomplished parts of the book.

RAYMOND PHINEAS STEARNS

JAMES GRAY. *History of the Royal Medical Society, 1737-1937*. Edited by DOUGLAS GUTHRIE. Edinburgh: Edinburgh University Press, 1952. xi + 355 pp. Ill. 42 shillings.

The first Alexander Monro was appointed professor of anatomy at Edinburgh in 1720. Six years later the faculty of medicine was formed in the "town's college." In 1729 a six-bed hospital was opened, which became, seven years later, the Royal Infirmary. A Society for the Improvement of Medical Knowledge was established in 1731 and soon began to publish its *Medical Essays and Observations*.

And in 1737 a final feature was added to this rising center of medical study when a student medical society was formally organized.

It came about quite naturally. One summer day in 1734 the body of a deceased stranger was offered to young Alexander Russell to dissect. Such an opportunity was rare, the price demanded was probably beyond one student's means, and Russell accordingly shared both his good luck and the expense with five fellow-students. As for the risk involved in such unauthorized anatomizing, Professor Monro gave the students the use and protection of his laboratory for their exercises. The dissection required a month's work; when it was completed, so stimulating had the students found their association in work, that they resolved to meet periodically thereafter to discuss medical subjects. Although five of the six left Edinburgh at the end of that year, the sixth invited some others to join him. Among these were William Cullen and John Fothergill. Two years later, in 1737, this informal group formally constituted itself the "Medical Society."

It grew as the medical school grew, reflecting its changing organization and doctrines. Each week one member read a dissertation on some medical question, another diagnosed and prescribed for a hypothetical case, and a third presented a commentary on one of the Hippocratic aphorisms. Each paper was followed by a critical discussion led by a member appointed for the purpose. Naturally the students reflected the ideas of their professors; so that it was in this society that strong criticisms were directed at the Boerhaavian system, while the reverberations of the conflict between Cullenian and Brunonian views reached such a pitch here that in 1781 a regulation had to be adopted, which remains on the Society's by-laws to this day, allowing the president to ask for assurances that no duel will take place if, in the heat of debate, one member utters a reflection on the personality of another.

Such, in a word, is the early history of the Society which Mr. Gray has told in its fulness through two centuries. A layman of Edinburgh, intrigued by the history of this ancient institution, Mr. Gray had been collecting and preparing material for several years before his death in 1942; that material has now been prepared for the press by the distinguished lecturer in the history of medicine at Edinburgh University. Making use of the Society's minutes (those before 1778 are unfortunately lost) and many printed materials, in an unadorned chronicle, Mr. Gray has presented some of the principal events and persons in the Society's history. He tells us something of the part some men took as medical undergraduates who were later distinguished leaders of their profession; he provides frequent revealing sidelights on such towering figures as Cullen, James Gregory, Andrew Duncan, James Y. Simpson, and Joseph Lister. He relates how the dignity of the Society was sometimes threatened and how its independence was always defended, for its members were jealous of its reputation and prerogatives; and tells something of the Society's larger relations with the profession, as in the case of its support of an anatomy act. He has sternly resisted the temptation to devote the bulk of his narrative to the founding and founders of the institution. Those chapers on the 19th century Society are in fact the fullest and most informative.

And yet something is lacking. The chapters on the first century of the Society do not supersede William Stroud's *History of the Medical Society of Edinburgh* (1820), which Mr. Gray mentions in his text but, curiously, does not cite in his

notes. The author rarely generalizes, so that the reader is often at a loss to know what direction the Society was taking at any time. When the narrative of the first years has been related, almost nothing is said again of the development of the medical school proper, on which, after all, the Society depended. And the extracts from the minutes are too few, and the quotations from autobiographies of successful specialists too formal, to give the reader an insight into student life and attitudes. Had Mr. Gray written in a larger frame and given his narrative the freshness and contemporaneity afforded by diaries like Sylas Neville's and letters like Samuel Bard's (neither of which, in justice be it said, was available to Mr. Gray), this book, which provides us with the annals of an ancient institution, would have offered us a chapter in the history of medical education and of student life generally. Yet no one interested in the Edinburgh medical school can afford not to consult this book.

There are some illustrations, a good index, and an appendix listing the names of the annual presidents (four a year) from 1764 through 1952.

WHITFIELD J. BELL, JR.

JAMES STIRLING ROSS. *The National Health Service in Great Britain.* An Historical and Descriptive Study. London: Oxford University Press, 1952. 398 pp. Ill. $7.00.

This is a much needed volume dealing with the national health services in Great Britain in an historical and descriptive setting. Sir James Ross has gathered together in brief compass an overall account of the services that is at once objective and factual.

With all the partisan fulminations on this subject both in Great Britain and the United States, this sober objective view of the developments in Great Britain serves as a *vade mecum* to the subject.

The author has divided his study into seven main headings, with numerous sub-headings. In Part I, An Introductory Survey, he covers the National Health Service as a mandate from the people, as a social policy, and gives the argument for the Service together with an outline of the method followed. Part II gives the antecedents of the National Health Service in historical retrospect from 1850 to 1939. Part III relates to the War Period, 1939-1946, in which the determination of policy and the general plan of the National Health Service was laid out. Part IV examines the organization of the Service in the years 1946-1948. Part V describes the Service in action from the appointed day, July 5, 1948, and all of the specialized groups that came within the provisions of the original act and all of its later amendments. Part VI is devoted to the National Health Service in Scotland. Part VII forecasts the future, based upon questions of policy and practice that have arisen in the administration of the Act.

Sir James has included a note on opinion in America on the National Health Service that covers a number of serious studies of the Service by Americans—Dr. Burnet Davis of the Federal Public Health Service in 1948; Mr. Oscar Ewing the Federal Security Administrator in 1949; Dr. Hugh R. Leavell of the

Harvard School of Public Health in 1949; Dr. Willard C. Rappleye of Columbia University in 1949; Mr. David M. Heyman in *The New York Times* in 1950; and Dr. Walter B. Martin in the *Journal of the American Medical Association* in August, 1950.

There is a postscript of nine pages covering the period November, 1951 to June, 1952 in which the author poses the query Quo Vadis? He embraces in these pages some of the pertinent developments in the Service during this period.

The author dates the origins of public health administration in England with the appointment in 1847 of Dr. W. H. Duncan as Medical Officer of Health for Liverpool and the appointment in 1848 of John Simon as the first Medical Officer of Health in London. In 1854 Simon "looked forward to the time when there would be a National Department of Health, with a Minister of Health responsible to Parliament, and with a mandate in the widest sense to care for the physical necessities of human life. The first of these events, in the realm of practice, marks the beginning of a public health system in England. The second, in the realm of ideas, marks the beginning of the slow logic of events which resulted in a National Health Service Act nearly 100 years later." (P. 25).

However, the author is not insensible to the developments of an earlier period lasting from 1830 to 1850. He recognizes the Reform Act of 1832; the reform of the Poor Law, and the establishment of the Poor Law Commission of 1834; the Municipal Corporation's Act of 1835, and the creation of the office of Registrar General. These measures were the primary instruments of the health pioneers.

The first report of the Registrar General, presented in 1838, contained appalling revelations of existing social conditions. Then came a series of reports on the conditions of the towns and of the labouring population, ending with the reports of the Health of Towns Commission in 1844 and 1845. The case for parliamentary action was established and the first Public Health Act became law in 1848. From this point on the development of a National Health Service became inevitable, but it took just 100 years to accomplish.

But when it was accomplished it became the biggest administrative change in the country's history. Sir James proceeds meticulously and painstakingly to detail the steps that were taken in England during the 100 year period to bring about this momentous change.

For any student of public health in Great Britain or the United States, or, in fact, in any country that follows the Anglo-Saxon development, this book becomes a *must*. It covers the ground with a firm grasp of the medical and social problems involved.

ROBERT G. PATERSON

WILLIAM DOSITE POSTELL. *The Health of Slaves on Southern Plantations.* Baton Rouge: Louisiana State University Press, 1951. xiii + 231 pp. Ill. $3.00.

This volume presents an excellent study of a regional problem—the health of slaves on southern plantations. The material is drawn mainly from primary sources—planters' records, such as account books, diaries, ledgers, day-books, and correspondence. A wide range of contemporary sources has been consulted and documented. The text itself consumes 164 pages, while the documentation covers 48 pages and the bibliography 5 pages. The latter encompasses a well selected list of the authoritative books and articles dealing with public health in the United States and there is a good index.

In Chapter I the author gives a clear view of the South and its health problem. He makes the point that the South was much the same as other rural areas in the nation. The differentiation lay in the prevailing frontier conditions, climate, and the presence of a large Negro population. He traces the growth of medical education, and professional knowledge through medical organizations, journals and writers.

There is a good discussion of the plantation system—commercial and patriarchal. The commercial system prevailed in the Carolinas and Georgia while the patriarchal system was introduced by Virginia and became the dominating type. Variations in the operation were due to the various kinds of staple crops—tobacco, cotton, rice and sugar. "Slaves were not only capital; they were also labor and there lay the weak point of the system. The protection of one was at the expense of the other."

Other chapters deal with the food, clothing and shelter of the slaves; three chapters on plantation medicine—one each on administration, diseases and injuries, and prevention and therapy; the care of women and children and finally, slave hospitals.

The author stresses the point that the slave suffered mainly from cholera, pneumonia, dysentery, certain dietary deficiency diseases and, to a lesser extent than his white master, from yellow fever and malaria. The other illnesses he suffered were those common for that day. There is a fascinating review of the opinions of post-bellum physicians concerning the incidence of diseases among the Negroes prior to emancipation. The concensus was that such diseases as tuberculosis, insanity, and syphillis, were almost unknown among the Negroes prior to the Civil War, whereas afterwards, the incidence was much greater.

All of this is backed up by reference to the medical writers of the South; statistics taken from the United States Censuses; observations by contemporary travelers through the South, and personal interviews. The author has made a distinct contribution in this workmanlike monograph.

ROBERT G. PATERSON

JAMES H. and MARY JANE RODABAUGH. *Nursing in Ohio; a History.* Columbus, Ohio: The Ohio State Nurses' Association, 1951. xiv + 273 pp. Ill. $4.00.

This is a well documented record of the evolution of modern nursing in Ohio. Starting with the beginnings of Ohio's history, the authors describe the primitive medical, hospital, and nursing practices of pioneer and Territorial days; the reforms in hospital and home care of the sick which were brought about by the religious orders imported from Europe; the impetus which the Civil War gave to the establishment of hospitals and nursing schools; the influence of the Nightingale system of training, through which nursing won general recognition and acceptance; and the subsequent rapid growth of schools of nursing, in hospitals of every type and size, to provide service for patients rather than education for students.

Later chapters tell the story of the establishment of organized nursing groups—Alumnae Associations, the American Society of Superintendents of Training Schools and State Nurses' Associations. The long and continuing struggle of the Ohio State Nurses Association to improve nursing education and nursing practice through legislative controls is described. One chapter is devoted to public health nursing in Ohio, another to the development of collegiate nursing schools, and others to nursing in both world wars and to the economic position of Ohio's nurses.

This volume will be of particular interest to Ohio nurses. It should be of value also to others interested in nursing history because the authors trace the development of nursing in Ohio as an active part of a national and international development.

VIRGINIA BETZOLD

THE BULLETIN RECENTLY RECEIVED *

Louis H. Bauer (editor). *Seventy-five Years of Medical Progress,* 1878-1953. Philadelphia: Lea & Febiger, 1954. 286 pp. Ill. $4.00.

Antonio Benivieni. *De abditis nonnullis ac mirandis morborum et sanationum causis.* Translation by Charles Singer, with a Biographical Appreciation by Esmond R. Long. Springfield, Ill.: Charles C Thomas, 1954. xlvi + 217 pp. Ill. $6.75.

Bibliography of Herman Goodman, M.D. Books, Articles and Other Work Published, 1918-1954. New York: Medical Lay Press, 1954. 48 pp.

Estelle Brodman. *The Development of Medical Bibliography.* Medical Library Association, Publication No. 1. Medical Library Association, 1954. x + 226 pp. Ill. $5.00.

Helen Buckler. *Doctor Dan: Pioneer in American Surgery.* Boston: Little Brown & Co., 1954. xviii + 381 pp. Ill. $5.00.

John F. Fulton. *Michael Servetus: Humanist and Martyr.* With a Bibliography of His Works and Census of Known Copies by Madeline E. Stanton. New York: Herbert Reichner, 1953. 98 pp. Ill. $8.50.

Iago Galdston. *The Meaning of Social Medicine.* Cambridge, Mass.: Published for the Commonwealth Fund by Harvard University Press, 1954. xii + 137 pp. $2.75.

Salvatore P. Lucia. *Wine as Food and Medicine.* New York-Toronto: The Blakiston Company, 1954. 149 pp. $3.00.

Webster Merritt and Joseph Lowenthal (editors). *Hundredth Birthday Duval County Medical Society, 1853-1953.* Jacksonville, Florida: Duval County Medical Society, 1954. 127 pp. Ill.

Ministerie van Onderwijs, Kunsten en Wetenschappen. *Rijksmuseum voor de Geschiedenis der Natuurwetenschappen.* Verslag van de Directrice over het Jaar 1952. 'S-Gravenhage: Staatsdrukkerij- en Uitgeverijbedrijf, 1953. 9 pp.

* The *Bulletin* reserves freedom of decision as to the publications to be listed in this section.

CONTRIBUTORS TO THIS NUMBER

WHITFIELD J. BELL, JR., Ph. D., is Visiting Professor of History, College of William and Mary, and Visiting Editor of the *William and Mary Quarterly*.

K. VIRGINIA BETZOLD, M. A., is Associate Director of the School of Nursing, The Johns Hopkins Hospital, Baltimore 5, Md.

EDWARD A. BLOCK, Ph. D., is Professor of English at San Diego State College, San Diego 15, Calif.

MAX H. FISCH, Ph. D., is Professor of Philosophy, University of Illinois, Urbana, Ill.

JOHN F. FULTON, M. D., is Sterling Professor of the History of Medicine, Yale University School of Medicine, New Haven 11, Conn.

BENTLEY B. GILBERT, is a doctoral candidate at the University of Wisconsin. His address is 19 Sherman Terrace, Apt. 2, Madison 4, Wis.

SAUL JARCHO, M. D., is Associate Physican at the Mount Sinai Hospital, New York 29, N. Y.

HERBERT S. KLICKSTEIN, M. D., is a Fellow at the Johns Hopkins Institute of the History of Medicine, 1900 E. Monument St., Baltimore 5, Md.

M. ELAINE MARTIN, is Demonstrator in Anatomy, Department of Anatomy, University of Saskatchewan, Saskatoon, Sask.

ANDERSON NETTLESHIP, M. D. is Professor of Pathology and Lecturer in the History of Medicine, University of Arkansas School of Medicine, Little Rock, Ark.

MARTIN M. NOTHMAN, M. D., is Assistant Clinical Professor of Medicine, New England Center Hospital and Tufts College Medical School, 171 Harrison Ave., Boston 11, Mass.

WALTER PAGEL, M. D., is Pathologist at the Central Middlesex Hospital, Park Royal, London, N. W. 10, England.

ROBERT G. PATERSON, Ph. D., is Emeritus Executive Secretary, Ohio Tuberculosis and Health Association, and late Secretary, Committee on Archives, National Tuberculosis Association. His address is Box 1391, Tryon, N. C.

SAMUEL X. RADBILL, M. D., Secretary, American Association of the History of Medicine, resides at 7043 Elmwood Ave., Philadelphia 42, Pa.

WALTHER RIESE, M. D., is Assistant Professor of the History of Medicine and of Psychiatry and Neurology at the Medical College of Virginia, Richmond, Va.

RAYMOND P. STEARNS, Ph. D., is Professor of History, University of Illinois, Urbana, Ill.

LLOYD G. STEVENSON, M. D., Ph. D., is Assistant Professor of Medical History and Literature, University of Western Ontario Faculty of Medicine, London, Ont.

LYNN THORNDIKE, Ph. D., L. H. D., is Professor Emeritus of History at Columbia University, New York City.